

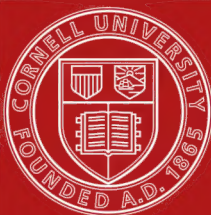
Cornell Law School Library

Cornell University Library
KF 5620.K55 1912
v.1

A treatise on the law of irrigation and



3 1924 019 999 576



Cornell University Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

A TREATISE
ON THE
LAW OF IRRIGATION
AND WATER RIGHTS

AND THE ARID REGION DOCTRINE OF
APPROPRIATION OF WATERS

AS THE SAME IS IN FORCE IN THE STATES OF THE ARID AND SEMI-
ARID REGIONS OF THE UNITED STATES; AND ALSO INCLUDING
AN ABSTRACT OF THE STATUTES OF THE RESPECTIVE
STATES, AND THE DECISIONS OF THE COURTS
RELATING TO THOSE SUBJECTS.

BY
CLESSON S. ^{elwyne}KINNEY
OF THE
SALT LAKE CITY BAR.

SECOND EDITION
IN FOUR VOLUMES.

REVISED AND ENLARGED TO OCTOBER 1, 1912.

VOLUME I.

SAN FRANCISCO
BENDER-MOSS COMPANY

LAW PUBLISHERS AND BOOKSELLERS

1912

B 12855.
Entered according to the Act of Congress, in the year 1893, by
CLESSON S. KINNEY,
in the office of the Librarian of Congress, at Washington.

COPYRIGHT, 1912,
BY
CLESSON S. KINNEY.

KF
5620
K55
1912

WILLIAMS PRINTING COMPANY



INDEPENDENT PRESS ROOM



DEDICATION OF THE FIRST EDITION

TO THE
HON. THOMAS M. COOLEY, LL. D.,
WHO EMINENTLY ADORNS AMERICAN JURISPRUDENCE, IN THE
CAPACITY OF
JUDGE, AUTHOR, AND TEACHER,
AND IN EACH OF WHICH HE HAS NO SUPERIOR,
THIS WORK IS DEDICATED
AS AN EXPRESSION OF ADMIRATION AND RESPECT, BY ONE WHO
HAS ENJOYED THE GOOD FORTUNE OF BEING
BOTH HIS PUPIL AND FRIEND.

PREFACE TO THE FIRST EDITION.

The present work has been written with the hope that it may prove serviceable to the profession in their investigation of a subject comparatively new in the history of American jurisprudence. Irrigation was born from the absolute necessities of the settlers of an arid region. Although practiced in the United States by an English speaking people but about fifty years it has been the principal means of the settlement and development of that portion of our country west of the 100th meridian, until today it has become a subject of paramount importance to the whole country.

Involving, as it does, a use of water based upon the principle of priority of appropriation—which doctrine was not recognized by the common law—irrigation has caused numberless controversies concerning water rights. As the result of these contentions, a mass of court decisions and statutory law upon the subject has been evolved which governs the subject of waters in the arid region.

Part One of this volume is devoted to a general discussion of the nature and history of irrigation and the general laws that govern the subject in the arid region.

As the character of irrigation law depends largely upon the physical and topographical conditions of the State or Territory wherein the same has been evolved and is in force, in order to understand its development the author has very briefly described the general condition of the various States and Territories in Part Two. This part also contains an abstract of the statutory laws and the construction of those laws by the courts.

CLESSION S. KINNEY.

SALT LAKE CITY, UTAH,
February 23, 1894.

PREFACE TO THE SECOND EDITION.

Probably no other industry in this country has developed to the extent that irrigated agriculture has developed during the last twenty years, or since the first edition of this work was written. Correspondingly, the laws upon the subject of the use of water for irrigation and all beneficial uses and purposes may be said to have developed.

In the States, since the first edition of this work was written, the irrigation district law of California, which was then hanging in the balance, has been declared constitutional by the Supreme Court of the United States. As a result, nearly every Western State has adopted an irrigation district law similar to that of California, as one of its systems of laws governing and controlling waters by local public corporations, and the State courts have invariably held that these laws were constitutional.

Again, during the period of 1901 to 1909 many of the States through their legislatures, have adopted irrigation or water codes, usually tending toward a system of State control of the waters within their boundaries and the appropriation, regulation, and distribution through State officials.

Furthermore, thousands of cases have been decided by the courts of last resort of these Western States, deciding or attempting to decide many propositions as they were presented and new phases of rights to waters.

In the meantime Congress has also been busy. The Carey Act was passed in 1894, by which, through the joint efforts of the United States, the respective States, and private corporations, thousands of acres have been reclaimed. Again, in 1902, the National Reclamation Act was passed and since that time has been in force. Through the Reclamation Service, under this Act, many thousands of acres are annually being reclaimed, and also many new features have been added to the law.

The law of subterranean waters, especially as to artesian or catchment basins, may be said to be at the present time in the period of transition from the strict rule of the common law, that all such waters belong to the owner of the soil where the same might

be found, to the law of correlative rights or the rights of all of the owners whose lands overlies these waters, to their proportion of the same.

From the above it may be seen that not only have many new laws been added to the law of water and water rights, but also many new features have been added to the old laws. Therefore, the present work has been entirely rewritten to meet the exigencies of the case. No excuse is offered for making the present edition in four volumes as it is fully warranted by the scope and importance of the subject. Upon the other hand, an apology ought to be offered for not revising the old edition about ten years ago.

In the present edition, we have aimed to make the work complete and exhaustive upon every phase of the subject and, by way of comparison, world wide in its application. Our abstract of foreign methods and laws is considered a valuable addition to the work.

The author having been in the active practice of law for over twenty-five years, and particularly in cases involving many of the subjects discussed, the main portion of the work was written from that standpoint and for the use of the courts and practitioners.

The author offers no apology for submitting this work to the profession, already over-burdened with law books. A great deal of labor and pains have been expended to make the work as complete as possible, and while it is too much to expect that no errors can be found, it is hoped that it will result in lightening the labors of those who are working along the lines of the subjects under discussion. Should the work accomplish this, it will compensate in a large measure for the time and toil expended upon it by the author.

CLESSON S. KINNEY.

Dated at SALT LAKE CITY, UTAH,
September 25, 1912.

CONDENSED TABLE OF CONTENTS

OF THE FOUR VOLUMES.

Volume I contains Secs. 1-626; Volume II, Secs. 627-1211; Volume III, Secs. 1212-1704; Volume IV, Secs. 1705-2129.

VOLUME ONE.

PART I.

ECONOMIC QUESTIONS RELATING TO IRRIGATION AND WATERS.

| | SECTIONS |
|---|----------|
| Chapter 1. ECONOMIC QUESTIONS AND METHODS..... | 1-39 |
| Chapter 2. FORESTS AND THEIR RELATION TO STREAM FLOW | 40-62 |

PART II.

ANCIENT AND MODERN IRRIGATION.

| | |
|--|---------|
| Chapter 3. THE HISTORY OF IRRIGATION..... | 63- 87 |
| Chapter 4. MODERN IRRIGATION IN EGYPT | 88-102 |
| Chapter 5. MODERN IRRIGATION IN INDIA | 103-118 |
| Chapter 6. MODERN IRRIGATION IN AUSTRALIA | 119-130 |
| Chapter 7. MODERN IRRIGATION IN SOUTH AFRICA..... | 131-143 |
| Chapter 8. MODERN IRRIGATION IN ITALY | 144-159 |
| Chapter 9. IRRIGATION IN VARIOUS COUNTRIES..... | 160-176 |
| Chapter 10. MODERN IRRIGATION IN CANADA | 177-237 |
| Chapter 11. MODERN IRRIGATION IN THE UNITED STATES | 238-270 |
| Chapter 12. IRRIGATION ON INDIAN RESERVATIONS..... | 271-285 |

PART III.

CLASSIFICATION, DEFINITIONS, AND THE NATURE OF WATERS.

| | |
|--|---------|
| Chapter 13. CLASSIFICATION AND NATURE OF RUNNING WATERS | 286-291 |
| Chapter 14. DEFINITIONS AND DESCRIPTIONS OF WATERS.. | 292-323 |

Volume I contains Secs. 1-626; Volume II, Secs. 627-1211; Volume III, Secs. 1212-1704; Volume IV, Secs. 1705-2129.

PART IV.

RIGHTS OF THE PUBLIC IN WATERS AND WATER COURSES.

| | SECTIONS |
|--|----------|
| Chapter 15. MISCELLANEOUS PUBLIC RIGHTS..... | 324-340 |
| Chapter 16. THE RIGHT OF NAVIGATION..... | 341-357 |
| Chapter 17. RIGHT OF FISHING AND HUNTING..... | 358-371 |
| Chapter 18. DEDICATION BY A STATE OF ITS WATERS..... | 372-389 |

PART V.

ACQUISITION AND DISPOSAL OF LANDS AND WATERS BY THE UNITED STATES.

| | |
|---|---------|
| Chapter 19. ACQUISITION OF LANDS AND WATERS BY THE UNITED STATES..... | 390-407 |
| Chapter 20. DISPOSAL OF LANDS AND WATERS BY THE UNITED STATES..... | 408-449 |

PART VI.

THE COMMON LAW GOVERNING WATERS.

| | |
|---|---------|
| Chapter 21. THE NATURE OF RIPARIAN RIGHTS..... | 450-456 |
| Chapter 22. UPON WHAT LANDS RIPARIAN RIGHTS ATTACH | 457-466 |
| Chapter 23. TO WHAT WATERS RIPARIAN RIGHTS ATTACH | 467-475 |
| Chapter 24. WHO ARE RIPARIAN PROPRIETORS..... | 476-482 |
| Chapter 25. RIGHT TO THE USE OF WATERS..... | 483-497 |
| Chapter 26. IRRIGATION AS A RIPARIAN RIGHT..... | 498-525 |
| Chapter 27. GRANTS AND CONTRACTS OF RIPARIAN RIGHTS | 526-535 |
| Chapter 28. VARIOUS RIPARIAN RIGHTS..... | 536-551 |

PART VII.

THE CIVIL LAW GOVERNING WATERS.

| | |
|---|---------|
| Chapter 29. THE ROMAN CIVIL LAW..... | 552-569 |
| Chapter 30. THE CIVIL LAW IN THE UNITED STATES..... | 570-584 |

PART VIII.

THE APPROPRIATION OF WATER FOR BENEFICIAL USES.

| | |
|--|---------|
| Chapter 31. ARID REGION DOCTRINE OF APPROPRIATION.. | 585-594 |
| Chapter 32. HISTORY OF DOCTRINE OF APPROPRIATION.... | 595-626 |

Volume I contains Secs. 1-626; Volume II, Secs. 627-1211; Volume III, Secs. 1212-1704; Volume IV, Secs. 1705-2129.

VOLUME TWO.

| | SECTIONS |
|---|----------|
| Chapter 33. TWO THEORIES AS TO LEGAL RIGHT..... | 627-640 |
| Chapter 34. WHAT WATERS MAY BE APPROPRIATED..... | 641-669 |
| Chapter 35. ON WHAT LANDS DIVERSION MAY BE MADE.. | 670-677 |
| Chapter 36. WHO MAY APPROPRIATE WATER..... | 678-689 |
| Chapter 37. THE PURPOSE OF THE APPROPRIATION..... | 690-705 |
| Chapter 38. METHODS OF APPROPRIATION WITHOUT CODE | 706-732 |
| Chapter 39. REASONABLE DILIGENCE..... | 733-741 |
| Chapter 40. THE DOCTRINE OF RELATION..... | 742-756 |

PART IX.

THE NATURE, EXTENT, AND CHARACTER OF RIGHTS ACQUIRED TO WATER BY APPROPRIATION, RIGHTS OF WAY, AND THE POLLUTION OF WATERS.

| | |
|---|-----------|
| Chapter 41. THE NATURE AND CHARACTER OF A WATER RIGHT | 757- 774 |
| Chapter 42. RIGHTS TO WATER AS BETWEEN APPROPRI- ATORS | 775- 803 |
| Chapter 43. APPROPRIATION AS AGAINST CONGRESSIONAL GRANTS | 804- 809 |
| Chapter 44. APPROPRIATION AS AGAINST RIPARIAN RIGHTS | 810- 823 |
| Chapter 45. MEANS OF THE USE AND CHARACTER OF THE WORKS | 824- 836 |
| Chapter 46. RESERVOIR AND STORAGE RIGHTS..... | 837- 846 |
| Chapter 47. MILL AND POWER RIGHTS..... | 847- 855 |
| Chapter 48. CHANGES WHICH MAY BE MADE..... | 856- 873 |
| Chapter 49. ECONOMICAL USE AND THE SUPPRESSION OF WASTE | 874- 916 |
| Chapter 50. CONTRACTS RELATING TO WATER RIGHTS.... | 917- 926 |
| Chapter 51. RIGHTS OF WAY OVER PUBLIC DOMAIN..... | 927- 971 |
| Chapter 52. RIGHTS OF WAY OVER PRIVATE LANDS..... | 972- 993 |
| Chapter 53. SALE AND ALIENATION OF WATER RIGHTS AND RIGHTS OF WAY..... | 994-1032 |
| Chapter 54. RIGHTS ACQUIRED BY PRESCRIPTION..... | 1033-1058 |
| Chapter 55. RIGHTS ACQUIRED BY EMINENT DOMAIN.... | 1059-1098 |
| Chapter 56. ABANDONMENT AND FORFEITURE..... | 1099-1120 |
| Chapter 57. THE DOCTRINE OF ESTOPPEL..... | 1121-1128 |
| Chapter 58. THE POLLUTION OF WATERS..... | 1129-1147 |

| | |
|--|------------------------------|
| x | CONDENSED TABLE OF CONTENTS. |
| Volume I contains Secs. 1-626; Volume II, Secs. 627-1211; Volume III, Secs. 1212-1704; Volume IV, Secs. 1705-2129. | |

PART X.

SUBTERRANEAN WATERS AND RIGHTS ACQUIRED THERETO.

| | SECTIONS |
|---|-----------|
| Chapter 59. SUBTERRANEAN WATERS IN GENERAL—CLASSIFICATION | 1148-1152 |
| Chapter 60. SUBTERRANEAN WATER COURSES..... | 1153-1165 |
| Chapter 61. ARTESIAN WATERS..... | 1166-1184 |
| Chapter 62. PERCOLATING WATERS..... | 1185-1211 |

VOLUME THREE.

PART XI.

INTERNATIONAL, INTERSTATE, FEDERAL, STATE, DISTRICT, AND MUNICIPAL CONTROL.

| | |
|--|-----------|
| Chapter 63. INTERNATIONAL CONTROL..... | 1212-1220 |
| Chapter 64. INTERSTATE CONTROL..... | 1221-1234 |
| Chapter 65. THE NATIONAL RECLAMATION ACT..... | 1235-1286 |
| Chapter 66. THE DESERT LAND ACTS..... | 1287-1311 |
| Chapter 67. THE CAREY LAW..... | 1312-1336 |
| Chapter 68. THE LAWS OF STATE CONTROL..... | 1337-1367 |
| Chapter 69. STATE CONTROL OF WATER RATES..... | 1368-1385 |
| Chapter 70. STATE IRRIGATION DISTRICT LAWS..... | 1386-1432 |
| Chapter 71. CONTROL BY MUNICIPAL CORPORATIONS..... | 1433-1448 |

PART XII.

CONTROL BY PRIVATE WATER COMPANIES.

| | |
|---|-----------|
| Chapter 72. SUBJECT IN GENERAL AND CLASSIFICATION OF PRIVATE WATER COMPANIES..... | 1449-1452 |
| Chapter 73. UNINCORPORATED COMPANIES..... | 1453-1463 |
| Chapter 74. ORGANIZATION AND POWERS OF CORPORATIONS | 1464-1478 |
| Chapter 75. MUTUAL WATER CORPORATIONS..... | 1479-1489 |
| Chapter 76. CORPORATION FOR PROFIT..... | 1490-1508 |
| Chapter 77. CONTRACTS WITH COMPANIES..... | 1509-1529 |

Volume I contains Secs. 1-626; Volume II, Secs. 627-1211; Volume III, Secs. 1212-1704; Volume IV, Secs. 1705-2129.

PART XIII.

ADJUDICATION AND PROTECTION OF RIGHTS—INJURIES TO RIGHTS AND REMEDIES THEREFOR.

| | SECTIONS |
|--|-----------|
| Chapter 78. THE ADJUDICATION OF WATER RIGHTS IN EQUITY | 1530-1566 |
| Chapter 79. STATUTORY ADJUDICATION OF WATER RIGHTS | 1567-1584 |
| Chapter 80. DETERMINATION OF WATER RIGHTS BY BOARDS | 1585-1595 |
| Chapter 81. PROTECTION OF RIGHTS BY INJUNCTION..... | 1596-1647 |
| Chapter 82. PROTECTION BY MISCELLANEOUS ACTIONS.. | 1648-1659 |
| Chapter 83. ACTIONS FOR DAMAGES..... | 1660-1704 |

VOLUME FOUR.

PART XIV.

SPECIAL FEATURES AND STATUTORY LAWS OF THE ARID AND SEMI-ARID STATES.

| | |
|-------------------------------------|-----------|
| Chapter 84. ALASKA | 1705-1710 |
| Chapter 85. ARIZONA | 1711-1723 |
| Chapter 86. CALIFORNIA | 1724-1768 |
| Chapter 87. COLORADO | 1769-1804 |
| Chapter 88. HAWAII | 1805-1816 |
| Chapter 89. IDAHO | 1817-1843 |
| Chapter 90. KANSAS | 1844-1861 |
| Chapter 91. MONTANA | 1862-1880 |
| Chapter 92. NEBRASKA | 1881-1899 |
| Chapter 93. NEVADA | 1900-1923 |
| Chapter 94. NEW MEXICO..... | 1924-1941 |
| Chapter 95. NORTH DAKOTA..... | 1942-1957 |
| Chapter 96. OKLAHOMA | 1958-1972 |
| Chapter 97. OREGON | 1973-1997 |
| Chapter 98. PHILIPPINE ISLANDS..... | 1998-2009 |
| Chapter 99. PORTO RICO..... | 2010-2023 |
| Chapter 100. SOUTH DAKOTA..... | 2024-2039 |
| Chapter 101. TEXAS | 2040-2053 |
| Chapter 102. UTAH | 2054-2075 |
| Chapter 103. WASHINGTON | 2076-2096 |
| Chapter 104. WYOMING | 2097-2129 |

TABLE OF CONTENTS.

VOLUME ONE.

COMPLETE TABLE OF CONTENTS OF VOLUME ONE BY SECTIONS AND PAGES.

PART I.

ECONOMIC QUESTIONS RELATING TO IRRIGATION AND WATERS.

CHAPTER 1.

ECONOMIC QUESTIONS AND METHODS.

| SECTIONS | PAGES |
|---|-------|
| 1. General scope of part and chapter..... | 2 |
| 2. Our fresh water resources..... | 2 |
| 3. "Irrigation"—Definitions | 4 |
| 4. Nature and importance of irrigation..... | 6 |
| 5. "Desert lands" and "arid lands" distinguished..... | 8 |
| 6. Drought and aridity..... | 9 |
| 7. The value of irrigation..... | 11 |
| 8. Irrigation enterprises and mistakes which have been made..... | 11 |
| 9. Effect of irrigation upon the individual..... | 13 |
| 10. Irrigation and storage of waters as a means of solving other important questions | 15 |
| 11. Irrigation as a means of preventing floods..... | 16 |
| 12. Irrigation as an aid to navigation..... | 19 |
| 13. Irrigation as a conserver of soil..... | 22 |
| 14. Irrigation as aiding in the reclamation of swamp lands..... | 23 |
| 15. Irrigation as an aid to the development of power..... | 24 |
| 16. The theory of irrigation..... | 25 |
| 17. Special benefits from irrigation..... | 27 |
| 18. To what crops irrigation is best adapted..... | 28 |
| 19. The effect of irrigation upon the climate | 30 |
| 20. The effect of irrigation upon the rainfall | 31 |
| 21. The effect of irrigation upon health | 32 |
| 22. The effect of irrigation upon summer frosts..... | 33 |

The Index references are to pages.

| SECTIONS | PAGES |
|---|-------|
| 23. The natural distribution of water diverted for irrigation..... | 34 |
| 24. Seepage water—Definitions and description..... | 35 |
| 25. Seepage water—Effects of | 37 |
| 26. Evaporation—Definition and description..... | 38 |
| 27. Evaporation—How prevented..... | 40 |
| 28. Transpiration—Nature and description of..... | 42 |
| 29. Supplemental irrigation—Definition and benefits..... | 43 |
| 30. Irrigation and its many methods..... | 45 |
| 31. Irrigation methods—How water obtained from natural sources..... | 48 |
| 32. Irrigation methods—The application of the water to the soil..... | 50 |
| 33. Methods of irrigation—Classification | 52 |
| 34. Methods of irrigation—Flooding land..... | 54 |
| 35. Methods of irrigation—The ditch or furrow method..... | 55 |
| 36. Methods of irrigation—Infiltration or sub-irrigation..... | 56 |
| 37. Methods of irrigation—Aspersions or sprinkling..... | 57 |
| 38. The drainage of irrigated lands or lands affected by irrigation..... | 57 |
| 39. Legal rights of the irrigator and the owner of irrigation projects..... | 59 |

CHAPTER 2.

FORESTS AND THEIR RELATION TO STREAM FLOW.

| | |
|---|----|
| 40. Scope of chapter..... | 61 |
| 41. Our forest resources..... | 62 |
| 42. Forest growth and methods of increase..... | 63 |
| 43. The destruction of our forests..... | 64 |
| 44. General physical effects of forests upon a country climate..... | 69 |
| 45. Influence of forests upon temperature | 70 |
| 46. Influence of forests upon humidity | 72 |
| 47. Influence of forests upon rainfall | 73 |
| 48. Influence of forests upon fallen precipitation | 74 |
| 49. Influence of forests upon fallen precipitation—Evaporation | 75 |
| 50. Influence of forests upon fallen precipitation—Transpiration | 78 |
| 51. Influence of forests upon fallen precipitation—Surface run-off..... | 79 |
| 52. Influence of forests upon fallen precipitation—Seepage run-off..... | 82 |
| 53. Influence of forests upon fallen precipitation—Deep seepage run-off.. | 83 |
| 54. Damages resulting from immediate surface run-off..... | 84 |
| 55. Damages from immediate surface run-off—Floods | 84 |
| 56. Damages from immediate surface run-off—Loss of water..... | 87 |
| 57. Damages from immediate surface run-off—Erosion | 89 |
| 58. The perpetuation of our forests | 94 |
| 59. The perpetuation of our forests—What has been done by the United States | 95 |
| 60. The perpetuation of our forests—What is being done by the States... | 97 |
| 61. The perpetuation of our forests—What has been done by municipalities | 97 |
| 62. The perpetuation of our forests—What has been done by the individual | 98 |

The Index references are to pages.

PART II.

ANCIENT AND MODERN IRRIGATION.

CHAPTER 3.

THE HISTORY OF IRRIGATION.

| SECTIONS | PAGES |
|---|-------|
| 63. The first knowledge of the science..... | 101 |
| 64. Civilization and irrigation..... | 103 |
| 65. Ancient irrigation of Biblical times | 104 |
| 66. Ancient irrigation in Egypt as described by early historians..... | 104 |
| 67. Ancient irrigation in Egypt as described by the writings of Plato.. | 105 |
| 68. Ancient irrigation in Egypt as described by recent research..... | 107 |
| 69. Ancient irrigation in China | 109 |
| 70. Ancient irrigation in India | 110 |
| 71. Other nations learned the science from Egypt..... | 110 |
| 72. Ancient irrigation in Assyria | 111 |
| 73. Ancient irrigation in Phoenicia | 111 |
| 74. Ancient irrigation in Greece | 112 |
| 75. Ancient irrigation by the Romans..... | 112 |
| 76. Ancient irrigation in Spain | 113 |
| 77. Ancient irrigation in the New World..... | 114 |
| 78. Ancient irrigation in Peru | 115 |
| 79. Ancient irrigation in Mexico | 116 |
| 80. Ancient irrigation by the Nahua nations..... | 117 |
| 81. Nahua nations—Arizona—Casa Grande..... | 119 |
| 82. Nahua nations—Mesa canal..... | 120 |
| 83. Nahua nations, continued—New Mexico..... | 121 |
| 84. Nahua nations, continued—Workings in other parts..... | 122 |
| 85. A court opinion upon the history of irrigation..... | 123 |
| 86. The skill and durability with which some of the ancient works were constructed | 124 |
| 87. Ancient irrigation—A lost science revived..... | 126 |

CHAPTER 4.

MODERN IRRIGATION IN EGYPT.

| | |
|--|-----|
| 88. Peculiarities of the country..... | 128 |
| 89. What irrigation means to Egypt..... | 130 |
| 90. Area irrigated—Perennial and basin irrigation..... | 131 |
| 91. Operations under the English..... | 132 |
| 92. Methods of taking and applying the water..... | 134 |
| 93. Repair and maintenance of ditches and canals—The <i>corvée</i> | 135 |
| 94. Irrigation law—In general..... | 137 |
| 95. Land titles in Egypt..... | 138 |
| 96. Irrigation laws and regulations—Powers and duties of officers..... | 139 |

The Index references are to pages.

| SECTIONS | PAGES |
|--|-------|
| 97. Irrigation laws—The water and irrigation code of 1894..... | 142 |
| 98. Regulations for machines for raising water..... | 151 |
| 99. Irrigation litigation | 153 |
| 100. Criticism of the Egyptian laws..... | 155 |
| 101. The law of State control in Egypt as compared with that of this country | 156 |
| 102. The lessons to be derived from the Egyptian system..... | 158 |

CHAPTER 5.

MODERN IRRIGATION IN INDIA.

| | |
|---|-----|
| 103. Peculiarities of the country..... | 161 |
| 104. Operations by the English..... | 163 |
| 105. Division of irrigation works—Expenditures and revenue..... | 165 |
| 106. Costs and profits in India as compared with those of the United States | 167 |
| 107. The government of India makes a net profit on its irrigation works.. | 168 |
| 108. The Ganges Canal—United Provinces..... | 169 |
| 109. The Sirhind Canal and other Punjab canals—Total mileage..... | 170 |
| 110. Attitude of the government toward irrigation..... | 171 |
| 111. The construction of works—Officers in charge..... | 172 |
| 112. The administration of works—Officers in charge..... | 173 |
| 113. Laws—Title to lands—Methods of leasing..... | 174 |
| 114. Irrigation laws governing the Northwest Provinces—Act of 1845.... | 175 |
| 115. The Northern Canal and Drainage Act of 1873..... | 177 |
| 116. The Bombay Acts of 1879 and 1880..... | 180 |
| 117. The Burma Canal Act of 1905—The Punjab Minor Canals Act of 1905 | 181 |
| 118. Conditions and results in India and this country compared..... | 182 |

CHAPTER 6.

MODERN IRRIGATION IN AUSTRALIA.

| | |
|---|-----|
| 119. Particular features of the country..... | 185 |
| 120. The government of Australia..... | 186 |
| 121. Irrigation enterprises—Failure and success..... | 186 |
| 122. Ownership and government of waters—In general..... | 188 |
| 123. New South Wales—Irrigation and laws..... | 189 |
| 124. South Australia and Queensland..... | 191 |
| 125. Victoria—Irrigation projects in..... | 191 |
| 126. Victoria—Laws and their history..... | 192 |
| 127. Victoria—The Water Act of 1905—Rights in natural waters..... | 196 |
| 128. Victoria—Authorities empowered to construct works—The board of land and works..... | 199 |
| 129. Victoria—Authorities empowered to administer works—The State Rivers and Water Supply Commission..... | 199 |
| 130. The lessons to be learned from Australia..... | 202 |

TABLE OF CONTENTS.

xvii

The Index references are to pages.

CHAPTER 7.

MODERN IRRIGATION IN SOUTH AFRICA.

| SECTIONS | PAGES |
|---|-------|
| 131. Particular features of the country..... | 205 |
| 132. The government of the Cape of Good Hope..... | 206 |
| 133. Irrigation and irrigation projects in the Cape of Good Hope..... | 206 |
| 134. Irrigation Act, 1906—Preliminary | 208 |
| 135. Irrigation Act, 1906—Divisions of—Criticism..... | 209 |
| 136. Irrigation Act, 1906—Utilization of streams..... | 210 |
| 137. River districts and boards..... | 211 |
| 138. Irrigation districts and boards..... | 212 |
| 139. Water courts | 213 |
| 140. Expropriation of land and acquisition of servitudes..... | 215 |
| 141. Irrigation loans, subsidies, and grants in aid..... | 216 |
| 142. General provisions of the Irrigation Act, 1906..... | 218 |
| 143. Lessons to be learned from the Colony of the Cape of Good Hope.... | 219 |

CHAPTER 8.

MODERN IRRIGATION IN ITALY.

| | |
|---|-----|
| 144. Peculiarities of the country..... | 220 |
| 145. The statutes and laws governing waters and their use..... | 223 |
| 146. Italy as a teacher of scientific irrigation..... | 224 |
| 147. Lombardy—Naviglio Grande Canal..... | 226 |
| 148. Lombardy—The Villoresi Canal..... | 228 |
| 149. Lombardy—Management of Villoresi Canal..... | 230 |
| 150. Lombardy—Vettabbia Canal—Use of sewage water..... | 234 |
| 151. Irrigation in Piedmont..... | 236 |
| 152. Piedmont—Cavour Canal—History | 239 |
| 153. Piedmont—Cavour Canal—Particular features..... | 241 |
| 154. Piedmont—Cavour Canal—Administration | 242 |
| 155. Piedmont—Water rates from government canals..... | 243 |
| 156. Association of water users..... | 245 |
| 157. Associations of water users—General Association west of Sesia..... | 246 |
| 158. General Association west of Sesia—Government..... | 248 |
| 159. The lessons to be learned from Italy..... | 251 |

CHAPTER 9.

IRRIGATION IN VARIOUS COUNTRIES.

| | |
|---|-----|
| 160. Scope of chapter | 252 |
| 161. Modern irrigation in France | 253 |
| 162. Modern irrigation in Spain | 255 |
| 163. Modern irrigation in Algeria | 257 |
| 164. Modern irrigation in England | 259 |

The Index references are to pages.

| SECTIONS | PAGES |
|--|-------|
| 165. Modern irrigation in other countries of Europe..... | 260 |
| 166. Modern irrigation in Asia | 262 |
| 167. Modern irrigation in Assyria | 263 |
| 168. Modern irrigation in China | 264 |
| 169. China—Methods of irrigation..... | 265 |
| 170. Lessons to be learned from China—Economy..... | 267 |
| 171. Modern irrigation in Siam | 268 |
| 172. Modern irrigation in Japan | 269 |
| 173. Modern irrigation on the Islands..... | 270 |
| 174. Modern irrigation in America | 271 |
| 175. Modern irrigation in Mexico | 272 |
| 176. Modern irrigation in the world—Conclusions..... | 275 |

CHAPTER 10.

MODERN IRRIGATION IN CANADA.

| | |
|---|-----|
| 177. Scope of chapter..... | 279 |
| 178. The English colonies as irrigators..... | 279 |
| 179. Particular features of the country..... | 280 |
| 180. The government of Canada..... | 281 |
| 181. Irrigation projects in Canada..... | 282 |
| 182. Saskatchewan and Alberta Provinces—Particular features..... | 283 |
| 183. Saskatchewan and Alberta Provinces—The Canadian Pacific Railway Company and irrigation..... | 284 |
| 184. The Canadian Pacific Railway Company—Statement by Mr. A. S. Dawson, Chief Engineer in charge as to project..... | 288 |
| 185. Saskatchewan and Alberta Provinces—The old Northwest Irrigation Act | 293 |
| 186. Saskatchewan and Alberta—"Irrigation Act"—Principal features of the Act—Irrigation district ordinance obsolete..... | 295 |
| 187. Saskatchewan and Alberta—"Irrigation Act"—Titles—Interpreta- tion | 297 |
| 188. Saskatchewan and Alberta—"Irrigation Act"—Unit of measure- ment—Application of Act..... | 298 |
| 189. Saskatchewan and Alberta—"Irrigation Act"—Water rights | 298 |
| 190. Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition —Construction of works, how authorized..... | 300 |
| 191. Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition —Construction of works..... | 308 |
| 192. Saskatchewan and Alberta—"Irrigation Act"—Expropriation | 309 |
| 193. Saskatchewan and Alberta—"Irrigation Act"—Licenses and li- censees | 312 |
| 194. Saskatchewan and Alberta—"Irrigation Act"—Complaints and in- spection | 315 |
| 195. Saskatchewan and Alberta—"Irrigation Act"—Amalgamation of companies | 318 |

TABLE OF CONTENTS.

. xix

The Index references are to pages.

| SECTIONS | PAGES |
|--|-------|
| 196. Saskatchewan and Alberta—"Irrigation Act"—Expropriation, cancellation, and forfeiture by the Government..... | 319 |
| 197. Saskatchewan and Alberta—"Irrigation Act"—General provisions..... | 321 |
| 198. Saskatchewan and Alberta—"Irrigation Act"—New Provinces..... | 323 |
| 199. Saskatchewan and Alberta—"Irrigation Act"—Powers of minister..... | 324 |
| 200. Saskatchewan and Alberta—"Irrigation Act"—Penalties | 327 |
| 201. Saskatchewan and Alberta—Regulations for the sale of lands required in connection with any system of irrigation..... | 329 |
| 202. British Columbia—Water Act—Short title | 331 |
| 203. British Columbia—Water Act—Interpretation | 332 |
| 204. British Columbia—Water Act—Confirming to the crown the ownership of all waters..... | 333 |
| 205. British Columbia—Water Act—The unit of measurement—Water districts and water commissioners..... | 334 |
| 206. British Columbia—Water Act—The creation of the "Board of Investigation" for the purpose of determining existing rights..... | 334 |
| 207. British Columbia—Water Act—Powers of Board of Investigation—The determination of existing water rights..... | 336 |
| 208. British Columbia—Water Act—Priority of purpose and of right in acquisition of water..... | 342 |
| 209. British Columbia—Water Act—Procedure to obtain water licenses and the general rights acquired by licenses..... | 343 |
| 210. British Columbia—Water Act—Approval of the undertaking of municipalities and companies..... | 351 |
| 211. British Columbia—Water Act—General powers and privileges of municipalities and companies using water for domestic purposes..... | 353 |
| 212. British Columbia—Water Act—Special powers and privileges of municipalities using water for domestic purposes..... | 354 |
| 213. British Columbia—Water Act—Powers and privileges of power companies | 356 |
| 214. British Columbia—Water Act—Municipalities as power companies.. | 357 |
| 215. British Columbia—Water Act—Clearing streams for driving logs... | 358 |
| 216. British Columbia—Water Act—Storing water..... | 362 |
| 217. British Columbia—Water Act—The taking and using of lands..... | 364 |
| 218. British Columbia—Water Act—The obligations, duties, and limitations imposed upon licensees..... | 365 |
| 219. British Columbia—Water Act—Respecting highways and other ways. | 367 |
| 220. British Columbia—Water Act—Power companies..... | 367 |
| 221. British Columbia—Water Act—Limitations of powers to purchase.. | 369 |
| 222. British Columbia—Water Act—Respecting free miners..... | 369 |
| 223. British Columbia—Water Act—Inspection of works..... | 370 |
| 224. British Columbia—Water Act—Settlement of disputes..... | 371 |
| 225. British Columbia—Water Act—Miscellaneous rights—In general.... | 372 |
| 226. British Columbia—Water Act—Abandonment of rights..... | 374 |
| 227. British Columbia—Water Act—Indian rights..... | 374 |
| 228. British Columbia—Water Act—Naming streams—Securities..... | 375 |

The Index references are to pages.

| SECTIONS | PAGES |
|--|-------|
| 229. British Columbia—Water Act—Rents and royalties..... | 376 |
| 230. British Columbia—Water Act—Reservations—Correction of errors in licenses | 376 |
| 231. British Columbia—Water Act—Respecting appeals—The certificate of the Lieutenant-Governor..... | 377 |
| 232. British Columbia—Water Act—Rules and regulations..... | 378 |
| 233. British Columbia—Water Act—Penalties | 379 |
| 234. British Columbia—Water Act—Saving clauses | 382 |
| 235. British Columbia—Water Act—Our criticism of the Act..... | 382 |
| 236. Saskatchewan and Alberta—Review and our criticism of the "Irrigation Act"..... | 384 |
| 237. Saskatchewan and Alberta—Irrigation Act—Comparative study—Riparian rights | 392 |

CHAPTER 11.

MODERN IRRIGATION IN THE UNITED STATES.

| | |
|--|-----|
| 238. Scope of chapter..... | 398 |
| 239. The arid and semi-arid regions..... | 398 |
| 240. States included in the arid and semi-arid regions..... | 399 |
| 241. The first of modern irrigation in the United States..... | 400 |
| 242. Settlements by the Spaniards..... | 401 |
| 243. The Mormons—First settlement..... | 402 |
| 244. The Mormons—The cause of the settlement and condition of the country | 403 |
| 245. The Mormons—Their policies and success..... | 404 |
| 246. The Mormons—Co-operative system—Size of farms..... | 405 |
| 247. The Greeley Colony—The first settlement..... | 406 |
| 248. The Greeley Colony—Cause of the settlement..... | 407 |
| 249. The Anaheim Colony—California | 408 |
| 250. Riverside Colony—California | 409 |
| 251. Growth of irrigation—1847-1880 | 410 |
| 252. Growth of irrigation, continued—1880-1890 | 411 |
| 253. Growth of irrigation, continued—The eleventh census of 1890..... | 413 |
| 254. Growth of irrigation, continued—1890-1900—The twelfth census of 1900 | 415 |
| 255. Growth of irrigation, continued—1900-1910 | 417 |
| 256. The thirteenth census of 1910..... | 419 |
| 257. Irrigation in the humid States | 422 |
| 258. Irrigation in the humid States, continued | 422 |
| 259. Irrigation in the humid States, continued—Twelfth census, 1900.... | 424 |
| 260. Irrigation in the humid States, continued—Thirteenth census, 1910. | 425 |
| 261. Irrigation in the rice-growing States—Louisiana..... | 425 |
| 262. Irrigation in the rice States, continued—States east of the Mississippi River | 426 |
| 263. Irrigation in the rice States, continued—The use of pumping plants | 428 |

TABLE OF CONTENTS.

xxi

The Index references are to pages.

| SECTIONS | PAGES |
|---|-------|
| 264. Irrigation in the rice-growing States, continued—Census reports, 1900 and 1910 | 428 |
| 265. The water supply—The extension of the irrigated area..... | 429 |
| 266. The present condition of the laws of irrigation in the different states | 431 |
| 267. The divided jurisdiction over lands and waters..... | 432 |
| 268. The necessity for irrigation in this country..... | 434 |
| 269. The future of irrigation in the United States—A National question.. | 435 |
| 270. Future of irrigation—Secretary Hitchcock's report..... | 437 |

CHAPTER 12.

IRRIGATION ON INDIAN RESERVATIONS.

| | |
|---|-----|
| 271. Scope of chapter..... | 441 |
| 272. The condition of Indian lands—The present policy of the government | 441 |
| 273. The principal factors in the civilization of the Indian..... | 443 |
| 274. Irrigation by different tribes in Arizona | 445 |
| 275. Irrigation by different tribes in California | 448 |
| 276. Irrigation by different tribes in Colorado | 450 |
| 277. Irrigation by different tribes in Idaho | 451 |
| 278. Irrigation by different tribes in Montana | 452 |
| 279. Irrigation by different tribes in Nevada | 455 |
| 280. Irrigation by different tribes in New Mexico..... | 457 |
| 281. Irrigation by different tribes in Oregon | 458 |
| 282. Irrigation by different tribes in Utah | 459 |
| 283. Irrigation by different tribes in Washington | 460 |
| 284. Irrigation by different tribes in Wyoming | 461 |
| 285. The effect of irrigation upon the Indian..... | 462 |

PART III.

CLASSIFICATION, DEFINITIONS, AND THE NATURE OF WATERS.

CHAPTER 13.

CLASSIFICATION AND NATURE OF RUNNING WATERS.

| | |
|---|-----|
| 286. Scope of chapter..... | 465 |
| 287. The classification of waters..... | 465 |
| 288. The nature of running waters under the civil law..... | 466 |
| 289. The nature of running waters under the common law..... | 467 |
| 290. Public and private waters—Public waters..... | 468 |
| 291. Private waters | 470 |

TABLE OF CONTENTS.

The Index references are to pages.

CHAPTER 14.

DEFINITIONS AND DESCRIPTION OF WATERS.

| SECTIONS | PAGES |
|---|-------|
| 292. Scope of chapter..... | 473 |
| 293. The sea—Jurisdiction—Shore | 474 |
| 294. Lakes—Definition—Description | 476 |
| 295. Great Lakes | 477 |
| 296. Lakes—Public and private..... | 478 |
| 297. Small lakes—Distinction between lakes and water courses..... | 480 |
| 298. Ponds—Definition and description..... | 481 |
| 299. Ponds—Colonial “great ponds”..... | 482 |
| 300. Pools—Definition and description..... | 483 |
| 301. Natural water courses—In general—Definition..... | 484 |
| 302. Water courses—General characteristics..... | 486 |
| 303. Water courses—Essential characteristics of—The channel..... | 490 |
| 304. Water courses—Essential characteristics—The bed..... | 492 |
| 305. Water courses—Essential characteristics—The banks..... | 494 |
| 306. Water courses—Essential characteristics—The current or flow..... | 495 |
| 307. Water courses—At times may be dry..... | 498 |
| 308. Rivers as water courses..... | 501 |
| 309. Streams as water courses..... | 505 |
| 310. Creeks, brooks, and rivulets as water courses..... | 506 |
| 311. Tributaries to natural water courses..... | 507 |
| 312. Ravines as natural water courses—“Wet weather arroyos”..... | 509 |
| 313. Springs and their relation to water courses..... | 511 |
| 314. Swales and their relation to natural water courses..... | 512 |
| 315. Sloughs as natural water courses..... | 513 |
| 316. Artificial water courses..... | 514 |
| 317. Swamps and marshes..... | 515 |
| 318. Surface waters proper..... | 516 |
| 319. Flood or storm waters..... | 519 |
| 320. “Developed water”—Description of..... | 522 |
| 321. “Surplus waters”—Definition and description..... | 522 |
| 322. “Waste water”—Definition and description..... | 523 |
| 323. Subterranean or underground waters—Classification..... | 523 |

PART IV.

RIGHTS OF THE PUBLIC IN WATERS AND WATER COURSES.

CHAPTER 15.

MISCELLANEOUS PUBLIC RIGHTS.

| | |
|--|-----|
| 324. Scope of part and chapter..... | 525 |
| 325. Ownership of the beds—Tide waters—Under common law..... | 526 |
| 326. Ownership of the beds—Tide waters—Rule in the United States.... | 527 |

TABLE OF CONTENTS.
The Index references are to pages.

xxiii

| SECTIONS | PAGES |
|--|-------|
| 327. Ownership of the beds—Great Lakes | 529 |
| 328. Ownership of the beds—Fresh water navigable rivers—Rule under the common law | 531 |
| 329. Ownership of the beds—Fresh water navigable rivers—Rule in the United States | 533 |
| 330. Title to beds—Public land States—State may adopt either rule.... | 539 |
| 331. Title to beds—Public land States—The rule in the States..... | 542 |
| 332. Meandered bodies of water—Title between the lines..... | 546 |
| 333. Ownership in the water—In general..... | 548 |
| 334. The right to the use of the water does not depend upon the owner- ship of the bed..... | 549 |
| 335. Right of access to public waters—From the land side..... | 551 |
| 336. Right of access to public waters—Obstruction from the water side.. | 553 |
| 337. Right of the public to gather ice..... | 554 |
| 338. Right of a State to divert water for power purposes..... | 556 |
| 339. Right of a State to divert water from a stream for irrigation.... | 556 |
| 340. Miscellaneous rights of the public..... | 558 |

CHAPTER 16.

THE RIGHT OF NAVIGATION.

| | |
|---|-----|
| 341. Scope of chapter..... | 559 |
| 342. The public right of navigation—Early rules..... | 559 |
| 343. The public right of navigation—Rule in the United States..... | 563 |
| 344. Stream need not be navigable entire year—Access..... | 566 |
| 345. For what purposes waters are navigable..... | 568 |
| 346. Navigability, how determined..... | 570 |
| 347. The right of navigation reserved by the Government..... | 574 |
| 348. The navigable waters of the United States and of a State distin- guished | 574 |
| 349. Use of waters for navigation—A paramount right..... | 576 |
| 350. Protection of navigation—Bridge Acts of Congress of March 3, 1899, and March 23, 1906..... | 579 |
| 351. Protection of navigation—The Dam Acts of Congress of March 3, 1899, June 21, 1906, and June 23, 1910..... | 582 |
| 352. Protection of navigation by Congress—Prohibiting the obstruction of navigation—Construction of Acts..... | 586 |
| 353. The destruction of the navigability of streams..... | 590 |
| 354. Navigation as against irrigation | 593 |
| 355. Navigation as against irrigation—Interference with tributaries.... | 596 |
| 356. Right to use water from navigable streams for irrigation..... | 599 |
| 357. Diversion of water in public streams for navigation..... | 600 |

TABLE OF CONTENTS.

The Index references are to pages.

CHAPTER 17.

RIGHT OF FISHING AND HUNTING.

| SECTIONS | PAGES |
|---|-------|
| 358. Scope of chapter..... | 603 |
| 359. In general—Property in fish and game..... | 603 |
| 360. Public right—Under common law..... | 604 |
| 361. Public right—General rule in the United States..... | 606 |
| 362. Public right—Power of legislature to make rule..... | 608 |
| 363. Public right—State grant of exclusive privileges..... | 610 |
| 364. Public right—Limited by prescription..... | 612 |
| 365. Private—Riparian rights | 613 |
| 366. Right where declaration is made that waters are public..... | 616 |
| 367. Right where declaration is made that waters are public—Hartman v. Tresise | 619 |
| 368. Exclusive right of fishing and hunting clubs..... | 622 |
| 369. Police powers of a State to regulate and protect fishing and hunting | 625 |
| 370. Police powers of a State to regulate obstructions in streams..... | 628 |
| 371. Destruction of fish by means of irrigation ditches..... | 630 |

CHAPTER 18.

DEDICATION BY A STATE OF ITS WATERS.

| | |
|--|-----|
| 372. Scope of chapter—Jurisdiction of a State over its waters—Terms of dedication | 632 |
| 373. Cause leading up to dedication..... | 634 |
| 374. Powers of a State to dedicate its waters | 637 |
| 375. Powers of a State to dedicate its waters—Limitations to the rule.. | 639 |
| 376. Early dedications | 641 |
| 377. States which have dedicated their waters..... | 641 |
| 378. Dedication by California—Partial by constitution and total by late statute | 642 |
| 379. Dedication by Colorado—Total dedication by the constitution..... | 644 |
| 380. Dedication by Idaho—Total dedication by constitution and statute.. | 646 |
| 381. Dedication by Montana—Partial | 648 |
| 382. New Mexico—Total dedication by the constitution and statutes..... | 648 |
| 383. Dedication by North Dakota—Total by the constitution..... | 649 |
| 384. Dedication by Washington—Partial by the constitution..... | 649 |
| 385. Dedication by Wyoming—Total dedication by the constitution..... | 650 |
| 386. Statutes of States not having constitutional provisions..... | 651 |
| 387. Effect of dedication by the States—Different doctrines..... | 654 |
| 388. Effect of dedication—As against the rights of the United States.... | 657 |
| 389. Other effects of dedication..... | 660 |

TABLE OF CONTENTS.
The Index references are to pages.

XXV

PART V.

ACQUISITION AND DISPOSAL OF LANDS AND WATERS BY THE
 UNITED STATES.

CHAPTER 19.

ACQUISITION OF LANDS AND WATERS BY THE UNITED STATES.

| SECTIONS | PAGES |
|---|-------|
| 390. Scope of chapter and part..... | 663 |
| 391. Public domain—Definition | 664 |
| 392. Public lands—Definition | 665 |
| 393. Power of the United States to acquire lands—Treaty-making power | 667 |
| 394. Power of the United States to acquire lands—Treaty-making power —Louisiana Purchase | 668 |
| 395. How the United States acquired its lands—Treaties with England.. | 669 |
| 396. How the United States acquired its lands—Cession from the origi- nal States | 670 |
| 397. Acquisition by treaty—Treaty with France—Louisiana Purchase.... | 671 |
| 398. Acquisition by treaty—Treaties with Spain—Floridas—Philippines and Porto Rico..... | 673 |
| 399. Acquisition by treaty—Treaties with Mexico—Guadalupe Hidalgo and the Gadsden Purchase..... | 673 |
| 400. Power to acquire lands by purchase..... | 674 |
| 401. Cession of the Hawaiian Islands..... | 674 |
| 402. Acquisition by treaty—Title taken subject to prior land grants.... | 676 |
| 403. Acquisition by treaty—Title taken subject to prior land grants— Spanish and Mexican grants..... | 677 |
| 404. Title taken subject to Indian right of occupancy..... | 679 |
| 405. Indian right of occupancy—Indian lands thrown open to settlement.. | 681 |
| 406. Acquisition of waters—Ownership originally in the United States.... | 684 |
| 407. Public lands of the States..... | 685 |

CHAPTER 20.

DISPOSAL OF LANDS AND WATERS BY THE UNITED STATES.

| | |
|---|-----|
| 408. Scope of chapter..... | 687 |
| 409. Power of the United States to dispose of its lands..... | 687 |
| 410. Ownership of soil and water distinguished..... | 689 |
| 411. Power of the United States to dispose of its waters..... | 690 |
| 412. How the Government disposes of its lands—In general..... | 694 |
| 413. Authority of the Government to make reservations and withdrawals.. | 694 |
| 414. Disposal of public lands by way of reservation by the Government— Effect of reservations..... | 698 |
| 415. Indian reservations—Disposal of Indian lands..... | 700 |
| 416. Forest reservations—Act of March 3, 1891..... | 702 |

The Index references are to pages.

| SECTIONS | PAGES |
|---|-------|
| 417. Forest reserves—Act of March 3, 1891—Objects of the Act..... | 703 |
| 418. Forest reservations—Act of March 3, 1891—What lands may be reserved—In general | 704 |
| 419. Forest reservations—Character of lands which may be reserved..... | 707 |
| 420. Forest reservations—How forest reserves are created..... | 708 |
| 421. Forest reservations—Act of June 4, 1897—The administration of forest reserves or National forests..... | 710 |
| 422. Forest reserves—Forest lands purchased by the United States to protect stream flow under Act of March 1, 1911—The National Forest Reservation Commission | 715 |
| 423. Forest reserves—Transfer of control to the Department of Agriculture—Rights of way over reserves..... | 718 |
| 424. Forest reservations—Rules and regulations—Criminal prosecutions... | 720 |
| 425. Forest reservations—Rules and regulations forbidding certain Acts.. | 722 |
| 426. The withdrawal and reservation of lands for power sites, irrigation, classification, and other purposes..... | 724 |
| 427. Donations for internal improvements—Donations to railroads..... | 726 |
| 428. Donations for internal improvements—Railway grants..... | 727 |
| 429. Donations for internal improvements—Miscellaneous grants..... | 728 |
| 430. Donations for school purposes | 728 |
| 431. Disposal by grants for townsites..... | 730 |
| 432. How the Government disposes of its lands—Through the general land office—To individuals | 732 |
| 433. Disposal to individuals—Pre-emptions | 732 |
| 434. Disposal to individuals—Homestead entries..... | 734 |
| 435. Disposal to individuals—Homestead entries—Enlarged homesteads... | 737 |
| 436. Disposal to individuals—Timber culture | 738 |
| 437. Disposal to individuals—Bounty lands..... | 739 |
| 438. Disposal to individuals—Public and private sale..... | 740 |
| 439. The sale of timber lands under the Timber and Stone Act..... | 740 |
| 440. Disposal to individuals—Mineral lands..... | 744 |
| 441. Disposal to individuals—Coal lands | 745 |
| 442. Coal lands—Surface agricultural entries thereon—Reservations of the coal | 746 |
| 443. Coal lands—Right to make surface agricultural entries, selections, and withdrawals—Reservation of coal..... | 747 |
| 444. Desert Land Act—Carey Act—National Reclamation Act..... | 749 |
| 445. Rights to land attach when..... | 750 |
| 446. Pre-existing water rights not affected by congressional grants..... | 751 |
| 447. Grantee takes subject to conditions annexed to grant..... | 752 |
| 448. Ownership and sovereignty distinguished—Jurisdiction..... | 754 |
| 449. After title has passed from the United States <i>lex loci sitae</i> governs.. | 756 |

TABLE OF CONTENTS.
The Index references are to pages.

xxvii

PART VI.

THE COMMON LAW GOVERNING WATERS.

CHAPTER 21.

THE NATURE OF RIPARIAN RIGHTS.

| SECTIONS | PAGES |
|---|-------|
| 450. Scope of chapter—Nature and extent of subject treated..... | 759 |
| 451. Upon what riparian rights are based—The ownership of the bank... | 760 |
| 452. The nature of riparian rights—Natural rights | 763 |
| 453. The nature of riparian rights—They are property and a part of the land itself | 765 |
| 454. Nature of riparian rights—As hereditaments..... | 768 |
| 455. The nature of riparian rights—The riparian owner's property in the water itself is merely usufructuary..... | 769 |
| 456. The nature of riparian rights—Deprivation of right..... | 773 |

CHAPTER 22.

UPON WHAT LANDS RIPARIAN RIGHTS ATTACH.

| | |
|---|-----|
| 457. Scope of chapter..... | 774 |
| 458. What are riparian lands—Extent—Side toward the stream..... | 774 |
| 459. Riparian rights on meandered waters..... | 777 |
| 460. What are riparian lands—How far from the stream such land may extend | 780 |
| 461. Extent of riparian lands—The land must be under one ownership.... | 781 |
| 462. Extent of riparian lands—All lands must lie within the same water- shed | 782 |
| 463. Extent of riparian lands—Lands claimed as riparian must be reason- able in extent..... | 786 |
| 464. Extent of riparian lands—Rules based upon the sources of title.... | 788 |
| 465. Extent of riparian lands—Rule that all lands in common ownership at time of claim are riparian..... | 792 |
| 466. The character of lands to which rights attach..... | 794 |

CHAPTER 23.

TO WHAT WATERS RIPARIAN RIGHTS ATTACH.

| | |
|---|-----|
| 467. Scope of chapter..... | 796 |
| 468. Rights attach to all natural water courses..... | 796 |
| 469. Natural water courses—Rights attach to navigable rivers..... | 797 |
| 470. Natural water courses—Rights attach to flood waters of stream.... | 801 |
| 471. Natural water courses—Rights attach to certain subterranean waters | 802 |
| 472. Natural water courses—Interstate rivers and streams..... | 802 |

The Index references are to pages.

| SECTIONS | PAGES |
|---|-------|
| 473. Riparian rights do not attach to artificial water courses unless by lapse of time they are deemed natural..... | 803 |
| 474. Lakes and ponds—General rule..... | 805 |
| 475. Riparian rights also attach to natural lakes and ponds—Western rule | 807 |

CHAPTER 24.

WHO ARE RIPARIAN PROPRIETORS.

| | |
|---|-----|
| 476. Scope of chapter | 809 |
| 477. The owners of the fee..... | 809 |
| 478. In certain cases the owners of less than fee—In inchoate rights.... | 810 |
| 479. Those entitled to the exclusive right of possession of riparian lands may use such rights..... | 812 |
| 480. The United States as a riparian owner..... | 813 |
| 481. A State as riparian owner..... | 815 |
| 482. A municipal corporation as riparian owner..... | 816 |

CHAPTER 25.

RIGHT TO THE USE OF WATERS.

| | |
|---|-----|
| 483. Scope of chapter..... | 819 |
| 484. The relative rights of owners on the same stream | 819 |
| 485. The relative rights of owners on the same stream—Mr. Justice Story's opinion | 823 |
| 486. Classification of uses under the common law..... | 824 |
| 487. "Natural uses" and "artificial uses" distinguished..... | 825 |
| 488. The use for natural wants may be extraordinary..... | 828 |
| 489. The use of water for "artificial wants" must be reasonable..... | 831 |
| 490. Reasonable use defined..... | 837 |
| 491. The use of water by diversion an extraordinary one..... | 840 |
| 492. What is a reasonable use for power purposes..... | 843 |
| 493. What is a reasonable use in cutting ice..... | 843 |
| 494. The manner of taking the water must be reasonable..... | 844 |
| 495. The manner of the use must be reasonable..... | 846 |
| 496. All surplus water must be returned to the stream after use..... | 847 |
| 497. No priority of right at common law..... | 848 |

CHAPTER 26.

IRRIGATION AS A RIPARIAN RIGHT.

| | |
|---|-----|
| 498. Scope of chapter..... | 853 |
| 499. Use of water for irrigation, a natural or artificial want—Upon principle | 854 |
| 500. Use of water for irrigation a natural or artificial want—The common law classification | 857 |
| 501. Early English doctrine | 859 |

TABLE OF CONTENTS.
The Index references are to pages.

xxix

| SECTIONS | PAGES |
|---|-------|
| 502. Later English doctrine..... | 861 |
| 503. Early Eastern American doctrine | 863 |
| 504. Later Eastern American doctrine | 864 |
| 505. Later Eastern American doctrine—Chancellor Kent's opinion..... | 866 |
| 506. Later Eastern American doctrine—Conclusion | 867 |
| 507. Western American doctrine v. the doctrine of appropriation—Classi- fication of States..... | 870 |
| 508. Western American doctrine—California rule..... | 873 |
| 509. Western American doctrine—Enlargement of the common law..... | 875 |
| 510. Western American doctrine—Extent to which water may be diverted | 880 |
| 511. Western American doctrine—Extension of the rule of "reasonable use" | 883 |
| 512. Western American doctrine—Reasonable use of water for irrigation by riparian proprietors..... | 886 |
| 513. Correlative rights of the several proprietors..... | 889 |
| 514. What lands may be irrigated by riparian proprietor—Must be riparian and lie within the watershed of the stream..... | 892 |
| 515. What lands may be irrigated—The question of title to different ad- joining tracts | 895 |
| 516. Non-riparian owner has no right..... | 898 |
| 517. Riparian owner has no right to irrigate non-riparian land..... | 899 |
| 518. Priority of use gives owner no exclusive right..... | 901 |
| 519. Riparian owner and prior appropriator at the same time..... | 902 |
| 520. Manner of taking the water..... | 905 |
| 521. Change in manner of taking the water—Change of use..... | 906 |
| 522. Surplus water must be returned to the natural stream..... | 907 |
| 523. Mere possession without title gives no riparian right..... | 908 |
| 524. Right to water in artificial water courses..... | 909 |
| 525. Conclusions | 910 |

CHAPTER 27.

GRANTS AND CONTRACTS OF RIPARIAN RIGHTS.

| | |
|--|-----|
| 526. Scope of chapter..... | 913 |
| 527. Public grants of rights in public waters..... | 913 |
| 528. Public grants of rights in private waters..... | 914 |
| 529. Private grants of riparian rights..... | 915 |
| 530. Private grants—Rights of grantee limited to the terms of the deed.. | 916 |
| 531. Private grants—Rights included with the land..... | 918 |
| 532. Private grants—Division of land at water's edge..... | 919 |
| 533. Private grants—Reservation of riparian rights..... | 919 |
| 534. Private grants—Grants of riparian rights only, separate and apart from the land..... | 920 |
| 535. Private grants—Grants of riparian rights involving the consumption of water..... | 921 |

TABLE OF CONTENTS.

The Index references are to pages.

CHAPTER 28.

VARIOUS RIPARIAN RIGHTS.

| SECTIONS | PAGES |
|---|-------|
| 536. Scope of chapter..... | 925 |
| 537. Ownership of the beds of private streams..... | 925 |
| 538. Accretion, reliction, and avulsion..... | 927 |
| 539. Avulsion | 931 |
| 540. The right of access to and from estate..... | 932 |
| 541. Title to the beds under small lakes and ponds—English rule..... | 936 |
| 542. Lakes and ponds—Title to soil in United States..... | 937 |
| 543. Right to natural flow of waters—In general..... | 939 |
| 544. Right to natural flow—Right to whole flow..... | 943 |
| 545. Right to natural flow—Obstructing flow..... | 945 |
| 546. Right to natural flow—Accelerating flow..... | 947 |
| 547. Right to natural flow—Backing up water..... | 948 |
| 548. Rights of riparian owner to the products of the water..... | 949 |
| 549. The modern Western rule of the “undiminished flow” of streams... | 950 |
| 550. Other miscellaneous riparian rights..... | 955 |
| 551. Summary and conclusions..... | 956 |

PART VII.

THE CIVIL LAW GOVERNING WATERS.

CHAPTER 29.

THE ROMAN CIVIL LAW.

| | |
|---|-----|
| 552. Scope of part and chapter..... | 959 |
| 553. The civil law—Historical..... | 960 |
| 554. Public and private waters..... | 961 |
| 555. The ownership of the running water | 962 |
| 556. The ownership of severed water | 964 |
| 557. The right of navigation..... | 964 |
| 558. Rights of riparian owners based on access..... | 966 |
| 559. Miscellaneous rights of the owners of the banks..... | 967 |
| 560. Surface waters | 969 |
| 561. The acquisition of water rights..... | 970 |
| 562. The right to the waters of springs..... | 972 |
| 563. The right to subterranean waters | 972 |
| 564. Grants of rights by riparian owners..... | 973 |
| 565. Loss of water rights..... | 973 |
| 566. Use of water for irrigation..... | 973 |
| 567. Rights of way..... | 974 |
| 568. Remedies | 976 |
| 569. Roman laws—Concluding comparisons..... | 977 |

TABLE OF CONTENTS.
The Index references are to pages.

xxxi

CHAPTER 30.

THE CIVIL LAW IN THE UNITED STATES.

| SECTIONS | PAGES |
|--|-------|
| 570. Scope of chapter..... | 980 |
| 571. Brought by the Dutch to New York..... | 981 |
| 572. Brought by the Spanish to the Southern States..... | 982 |
| 573. By the Spanish—The Partidas..... | 982 |
| 574. Brought by the French to Louisiana—Code of Domat..... | 984 |
| 575. Brought by the French to Louisiana—Code of Napoleón..... | 986 |
| 576. Brought by the Mexicans to the Western States..... | 987 |
| 577. The Mexican laws—In general..... | 989 |
| 578. The Mexican water laws—Acquisition of private rights..... | 991 |
| 579. Mexican laws—The acquisition of private rights by way of Govern- ment concessions | 992 |
| 580. Use of water not confined to riparian lands..... | 993 |
| 581. The Mexican water laws—Pueblo rights—The plan of Pictic..... | 994 |
| 582. The Mexican water laws—Pueblo rights—Right to extend the use of water to territory named to pueblos..... | 997 |
| 583. The Mexican water laws—As affecting the rights to water on Mex- ican land grants..... | 998 |
| 584. Conclusions | 1002 |

PART VIII.

THE APPROPRIATION OF WATER FOR BENEFICIAL USES.

CHAPTER 31.

ARID REGION DOCTRINE OF APPROPRIATION.

| | |
|---|------|
| 585. Review—Scope of present chapter..... | 1005 |
| 586. What it is—Judge Hawley's definition and description..... | 1007 |
| 587. What it is—Definition—In derogation of the common law..... | 1009 |
| 588. Physical cause of doctrine of appropriation..... | 1011 |
| 589. Physical cause of doctrine—Common law deemed inapplicable..... | 1012 |
| 590. Common law not adopted where inapplicable—General rule..... | 1017 |
| 591. Common law deemed inapplicable—Cause of the change of rule in Nevada | 1020 |
| 592. Common law deemed inapplicable—The present situation in Califor- nia | 1023 |
| 593. The question as to what law governs waters within the respective States is left entirely to the States to decide..... | 1025 |
| 594. The doctrine of appropriation as against rights—Practical workings of the two systems as to irrigation..... | 1029 |

CHAPTER 32.

HISTORY OF DOCTRINE OF APPROPRIATION.

| SECTIONS | PAGES |
|--|-------|
| 595. Scope of chapter..... | 1038 |
| 596. The discovery of gold in California..... | 1038 |
| 597. The character of the immigrants to California..... | 1038 |
| 598. Mining rules and regulations..... | 1040 |
| 599. Introduction of element of priority..... | 1043 |
| 600. California Act of 1851—Proof of custom..... | 1046 |
| 601. Early court decisions against doctrine | 1047 |
| 602. Early court decisions in favor of doctrine—In general | 1049 |
| 603. Early court decisions in favor of doctrine—Irwin v. Phillips..... | 1050 |
| 604. Possessors both of lands and waters at this time mere trespassers... | 1052 |
| 605. The settled rule before any Act of Congress—Spread of California doctrine | 1053 |
| 606. Attempted preference first given to mining..... | 1054 |
| 607. All beneficial uses finally given equal footing..... | 1056 |
| 608. Decisions of court judicial legislation..... | 1057 |
| 609. Character of title of claimants..... | 1059 |
| 610. California decisions based upon presumption of grant..... | 1060 |
| 611. Act of Congress of July 26, 1866..... | 1064 |
| 612. How the Act of July 26, 1866, was passed..... | 1066 |
| 613. Decision of the Supreme Court of the United States as to the cause of the passage of the Act of 1866—Jennison v. Kirk..... | 1069 |
| 614. Other decisions as to the cause of the passage of the Act of 1866.... | 1073 |
| 615. Act of July 9, 1870, making all patents subject to vested rights.... | 1074 |
| 616. Construction of Acts of 1866 and 1870—Effect of Acts on appro- priations against patentees of the Government prior to 1866. | 1076 |
| 617. Construction of Acts of 1866 and 1870—No new system adopted by Acts | 1079 |
| 618. Construction of Acts of 1866 and 1870—Effect of Acts as to the time the rights to water vested..... | 1081 |
| 619. Effect of Acts upon title of appropriators—Equivalent to a grant... | 1086 |
| 620. State regulation as the result of the Acts of 1866 and 1870..... | 1086 |
| 621. States adopting Arid Region Doctrine of appropriation..... | 1088 |
| 622. Desert Land Acts of March 3, 1877, and March 3, 1891, also strengthened and confirmed doctrine of appropriation..... | 1089 |
| 623. Desert Land Acts—Construction of Act confirms the right of appro- priation | 1091 |
| 624. Later Acts of Congress confirming doctrine of appropriation..... | 1093 |
| 625. The Acts of Congress must not be construed as an absolute dedica- tion of all the waters for appropriation..... | 1095 |
| 626. The result of the doctrine of appropriation..... | 1096 |

KINNEY

ON

IRRIGATION AND WATER RIGHTS.

SECOND EDITION—VOLUME ONE.

PART I.

ECONOMIC QUESTIONS RELATING TO IRRIGATION AND WATERS.

CHAPTER 1.

ECONOMIC QUESTIONS AND METHODS.

- § 1. General scope of part and chapter.
- § 2. Our fresh water resources.
- § 3. "Irrigation"—Definitions.
- § 4. Nature and importance of irrigation.
- § 5. "Desert lands" and "arid lands" distinguished.
- § 6. Drought and aridity.
- § 7. The value of irrigation.
- § 8. Irrigation enterprises and mistakes which have been made.
- § 9. Effect of irrigation upon the individual.
- § 10. Irrigation and storage of waters as a means of solving other important questions.
- § 11. Irrigation as a means of preventing floods.
- § 12. Irrigation as an aid to navigation.
- § 13. Irrigation as a conserver of soil.
- § 14. Irrigation as aiding in the reclamation of swamp lands.
- § 15. Irrigation as an aid to the development of power.
- § 16. The theory of irrigation.
- § 17. Special benefits from irrigation.
- § 18. To what crops irrigation is best adapted.
- § 19. The effect of irrigation upon the climate.
- § 20. The effect of irrigation upon the rainfall.
- § 21. The effect of irrigation upon health.
- § 22. The effect of irrigation upon summer frosts.
- § 23. The natural distribution of water diverted for irrigation.
- § 24. Seepage water—Definitions and description.

- § 25. Seepage water—Effects of.
- § 26. Evaporation—Definition and description.
- § 27. Evaporation—How prevented.
- § 28. Transpiration—Nature and description of.
- § 29. Supplemental irrigation—Definition and benefits.
- § 30. Irrigation and its many methods.
- § 31. Irrigation methods—How water obtained from natural sources.
- § 32. Irrigation methods—The application of the water to the soil.
- § 33. Methods of irrigation—Classification.
- § 34. Methods of irrigation—Flooding land.
- § 35. Methods of irrigation—The ditch or furrow method.
- § 36. Methods of irrigation—Infiltration or sub-irrigation.
- § 37. Methods of irrigation—Aspersions or sprinkling.
- § 38. The drainage of irrigated lands or lands affected by irrigation.
- § 39. Legal rights of the irrigator and the owner of irrigation projects.

§ 1. **General scope of part and chapter.**—The economic importance of irrigation to the whole country is not well understood by the people generally; and, except among those who are especially interested in the subject, there is very little knowledge, and that of the most general kind. In this and the following chapter, we will discuss largely the economic side of the question; and in this chapter, irrigation as related to the many important subjects and industries of the country, and its many methods. In the following chapter, forests and their relation to stream flow will be discussed; the waters of which streams are used for the many necessities and enterprises such as domestic, irrigation, navigation, and the many useful purposes to which water is applied. We will also discuss the many disastrous results to the country, in soil wash, flooding of lower lands, in the failure of inland navigation, and other kindred subjects, by not more fully conserving our water supply for use, but permitting the waters to run to waste at will, and thereby causing such results.

In the discussion of so many of these subjects in these two chapters, our space to each is necessarily limited. However, for those who desire to investigate further, will be found voluminous references to the authorities in our foot notes.

§ 2. **Our fresh water resources.**—The sole source of our fresh water supply is from precipitation, which comes to the earth from the clouds either in the form of rain or snow. From this source, our running, standing, and subterranean waters of all classes are derived. The habitability of the country depends on these waters.

Through the observations and measurements of the United States Weather Bureau, at some 4,000 stations scattered throughout all sections of the country, our annual precipitation is known more accurately than that of any other equal area on the globe. The quantity of water falling upon the land averages 200,000,000,000,000 cubic feet per annum; and, including that falling on water areas, it is 215,000,000,000,000 cubic feet per annum. This is equal to 6,088,236,690 kilosteres,¹ 5,000,000,000 acre-feet or 1,500 cubic miles. The volume is that of ten rivers the size of the Mississippi.

But this precipitation is not distributed equally over the entire surface of the country. The proximity to the sea, the mountain ranges, the prevailing winds, and many other conditions peculiar to certain sections of the country, cause a very unequal distribution of the rainfall. And it has been ascertained that the annual rainfall² on the more humid two-fifths of the country east of the 95th meridian is nearly 48 inches; the quantity of about 140,000,000,000,000 cubic feet. On the semi-arid fifth of our area, or between the 95th and 103d meridians, the rainfall averages 30 inches and aggregates over 40,000,000,000,000 cubic feet. The rainfall on the western two-fifths of the country, including what is known as the arid region of the United States and concerning which this work largely relates, averages only about 12 inches per annum, or some 35,000,000,000,000 cubic feet. This again is by no means distributed equally over this area, and varies in different sections from five to six inches to amounts equaling the rainfall in some of the more humid sections.

Generally speaking, the distribution of the total rainfall is as follows: Over one-half is evaporated; about one-third flows into the sea; the remaining one-sixth is either consumed or absorbed. These portions are called, respectively, the "fly-off," the "run-off," and the "cut-off," and are partly interchangeable.

The fly-off influences the climate, and thus affects agriculture and other industries in all parts of the country. Except in a moderate degree through the management of the land surface, it is beyond artificial control.³

The run-off is available for water supply for various purposes,

1 A kilostere of water is equivalent to a cube of 32.8 feet.

2 And in this we include the snow.

3 For evaporation and the prevention of the same, see Secs. 26, 27.

such as domestic use, irrigation, navigation, and power. It is now controlled in small part by artificial means, and may be wholly controlled by proper means.⁴ The run-off is increasing yearly, with deforestation of the drainage basins along the sources of the rivers and streams.⁵

The cut-off, or the remainder of the rainfall under this classification, is either consumed in plant growth and other chemical combinations, or it permeates the deeper strata of the earth and passes subterraneously into the sea. It is now partially controlled by human agency, chiefly through farming and forestry; and this control may be much increased.⁶ With this understanding of the rainfall of this country and its general distribution by Nature, we will discuss in the remaining portion of this chapter the economic questions as relating to the regulation and distribution of our water supply through the agency of man, and more especially by the means of the irrigation of arid lands.⁷

§ 3. "Irrigation"—Definitions.—Irrigation is defined as the "act or process of irrigation, or state of being irrigated." "The supplying of water to land by canals, ditches, etc.; the operation of causing water to flow over land, for nourishing plants." "A refreshing or making fertile as if by watering."¹

The word "irrigation" in its primary sense, means any kind of watering or moistening, yet, in common parlance, its meaning is ordinarily restricted to the "watering of lands for agricultural purposes."²

As defined in the Australian Water Act, 1905: "'Irrigation' means any method of causing water from a stream or channel to flow upon and spread over land for the purpose of tillage or im-

⁴ See Secs. 11-15.

⁵ For forests and their relation to stream flow, see Chap. 2, Secs. 40-62.

⁶ See article by W. J. McGee, Secretary, Section of Waters, Vol. 1, Report of the National Conservation Commission, 1909, pp. 39-49, in which the above data was furnished by Willis L. Moore, Chief of the United States Weather Bureau.

See, also, Distribution of the Rainfall, by Henry Gannett of the U. S. Geological Survey, Vol. 2, pp. 10-12,

Report of the National Conservation Commission, 1909. Also, Water Circulation and Its Control, by Bailey Willis, Vol. 2, p. 687, same report.

⁷ For the relation of forests to stream flow, see Chap. 2, Secs. 40-62.

¹ Webster's New. Int. Dict., 1911, sub.: Irrigation.

See, also, Am. & Eng. Encyc. of Law, 2d Ed., sub.: Irrigation. Bouvier's Law Dict., sub.: Irrigation.

² Cent. Dict., sub.: Irrigation.

provement of pasture, or of applying water to the surface of the land for the like purposes.”³ It is a method of producing or increasing fertility in dry soils by an artificial supply of water, conducted over the lands by means of ditches or trenches, or by inundation at stated periods. Although the term in its primary sense is defined to be any sprinkling or watering, it has an agricultural or special signification. As stated by the Colorado court in construing the meaning of the term as used in the Colorado Acts of 1879 and 1881, which provided for a system of procedure for determining the priority of rights to the use of water for irrigation, between the owners of ditches, canals, and reservoirs taking water from the same natural stream:⁴ “The word ‘irrigation,’ in its primary sense, is defined ‘a sprinkling, or watering’; yet, according to the best lexicographers, it has an agricultural or special signification: ‘The watering of lands by drains or channels.’ Worcester. ‘The operation of causing water to flow over lands for nourishing plants.’ Webster. Considering the history of Colorado, the nature of its soil and climate, its constitutional and legislative enactments, as well as the decisions of our courts, we have no hesitation in saying that our legislators used the term ‘irrigation’ in the acts under consideration according to the common parlance of our people—in its special sense—as denoting the application of water to lands for the raising of agricultural crops and other products of the soil.”⁵

Again, in a Nebraska case, in construing the use of the word in the title of the Act of March 27, 1889, entitled, “An act to provide for water rights and irrigation, and to regulate the right to the use of water for agricultural and manufacturing purposes,” it was said: “The word ‘irrigation,’ as employed in the title of the act under consideration, is apparently used in its popular sense, and denotes the application of water to land for the production of crops.”⁶ The method of obtaining the

³ Water Act Australia 1905, No. 2016, 12th December, 1905, Sec. 3.

For irrigation in Australia, see Chap. 6, Secs. 119-130.

⁴ For the adjudication of water rights in Colorado, see Parts 13, 14.

⁵ Platte Water Co. v. Northern Colo. Irr. Co., 12 Colo. 525, 21 Pac. Rep. 711, 2 Denver Leg. News, 201, and

also holding that “The use of water for the purpose of irrigation clearly implies the means of conducting it to the land to which it is applied.”

⁶ Paxton & Hershey etc. Co. v. Farmers’ etc. Co., 45 Neb. 884, 64 N. W. Rep. 343, 29 L. E. A. 853, 50 Am. St. Rep. 585.

water from the natural stream for the purpose of applying it to the land has nothing to do with the signification of the word. The water may be taken out by the means of ditches or canals or it may be raised by the means of pumps. As was said in a California case of *Charnock v. Higuerra*⁷ relative to the meaning of the words "irrigate" and "irrigation," the court said: "So far as we can understand, this argument is based on the meaning of the word 'irrigate,' which counsel contends is 'to convey water by ditches,' and on the alleged universal custom in the past to employ only such means in irrigation. As to the meaning of the word 'irrigation' counsel cites some doubtful passages from civil law writers; but it is evident that this court, in holding, as it has repeatedly held, that riparian proprietors have the right to use a reasonable proportion of the water of the stream to irrigate their lands, used the term in no such restricted sense. The Latin word from which it is derived means primarily, to convey waters to or upon anything, and, more generally, to wet or moisten anything; and the ordinary definition in our language is to water lands, whether by channels, by flooding, or simply by sprinkling. The mere method of obtaining the water with which to irrigate *has nothing to do with the process of irrigation, or the meaning of the word.*" Regarding the term "irrigation purposes" or "purposes of irrigation," it is held by the Washington court that it "is a common expression in the legislation of this State, and has acquired a well-defined meaning, which is synonymous with 'agricultural purposes,' or, at least, the former is included within the latter."⁸

§ 4. Nature and importance of irrigation.—The moistening, enriching, or improving of land, for agricultural purposes by

⁷ 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195.

⁸ *State v. Tiffany*, 44 Wash. 602, 87 Pac. Rep. 932.

See, also, for the appropriation of water for irrigation, Secs. 585-756.

See, also, *Rodgers v. Pitt*, 129 Fed. Rep. 932; *Sayre v. Johnson*, 33 Mont. 15, 81 Pac. Rep. 389; *Kleinschmidt v. Greiser*, 14 Mont. 484, 37 Pac. Rep. 5, 43 Am. St. Rep. 652;

Pyke v. Burnside, 8 Idaho, 487, 69 Pac. Rep. 477; *Walsh v. Wallace*, 26 Nev. 299, 67 Pac. Rep. 914, 99 Am. St. Rep. 692; *Millheiser v. Long*, 10 New Mex. 99, 61 Pac. Rep. 111; *Smyth v. Neal*, 31 Ore. 105, 49 Pac. Rep. 850; *Power v. Switzer*, 21 Mont. 523, 55 Pac. Rep. 32; *Basey v. Gallagher*, 87 U. S. 20 Wall., 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683.

means of the application of water, is a subject of enormous importance throughout a great part of the globe. In some parts, Nature alone applies this powerful means of improvement. In others, it is effected for the most part by Nature, occasionally or partially assisted by human skill or labor. Again, in other parts, irrigation as a mode of improvement upon Nature's effort is effected principally by the skill and efforts of man. In all cases, this agency of water, skillfully applied, is more or less useful, according to the circumstances of the case, and the nature and character of the soil and climate where it is so applied. It may be used for ameliorating the soils of different characters, and increasing the amount of their products, as well as adding to the forms of plant life. The tropical rivers annually convey to the lower plains through which they flow immense supplies of enriching deposits, which nourish the products of the soil, or which tend to form and enrich those vast savannahs which occur in those parts. Again, in the warm but more temperate climates, there are immense tracts of land, which, for native vegetation, have only here and there patches of greasewood, sage brush, or mesquite, and which, if not irrigated, except for small value for grazing purposes, so far as any use to civilization is concerned, might as well be wholly barren. Instructed by Nature and educated by experience in the use and application of this element, water, for ameliorating the soil, mankind has already felt its great value and importance from the equator to nearly the 60th degree of north latitude, and, extending in a more limited scale partly into the southern temperate zone. The periodical rains within the tropics are not sufficient, in that burning climate, to nourish plant life and to raise crops necessary to support the population, had not Nature by means of her mighty rivers and streams come to their aid, and if art and labor were not also employed in irrigating and fertilizing vast tracts of land. Even in the vineyards, orchards, and fields in the milder climates of Italy and France, immense profits and advantages are derived from this mode of improvement and cultivation by the judicious artificial application of water to the soil. Irrigation, when properly conducted with care and forethought, has a tendency to improve the soil as well as the climate of the surrounding country where it is practiced, while at the same time the element of the water itself is directed to purposes most useful and profit-

able to mankind. The advantages of this mode of improvement are of course greatest in populous districts, where a small amount of land owned by one person may be brought under a very high grade of intensive cultivation and be made productive of more prolific crops and of a superior value. But, upon the great plains and high plateaus of the arid region of the United States, and where the population is even as yet exceedingly sparse, water is of the utmost value wherever it can be directed safely for irrigation purposes.¹

§ 5. "Desert lands" and "arid lands" distinguished.—A great deal has been written and said about the "desert lands" of the Western part of this country, especially in the early histories of this country, that the facts do not bear out. This has led to a misapprehension, especially in the East, as to the true condition of the West. The early geographies of our boyhood days had great areas of land scattered throughout all of this Western country designated as "desert." It is true that in some isolated portions of the West, for instance in western Utah and in south-eastern California, there may be tracts of land which may be called desert in the strict sense of the term. But, in the main, the statements made in our early histories and geographies, in the light of more recent development, as to the greater portion of this Western country being desert, are about as true as were the statements made by Daniel Webster in his "howling wilderness" speech. He used this language as to the western territory which we acquired from Mexico: "What do you want of that vast and worthless area, that region of savages and wild beasts, of deserts, of shifting sands and whirling wind, of dust, of cactus and prairie dogs? To what use could we ever hope to put those great deserts and those endless mountain ranges, impenetrable and covered to their very base with eternal snow? What can we ever do with the Western coast, a coast of 3,000 miles, rock-bound, cheerless, and uninviting?" It may be true, and it probably is, that Mr. Webster, when he made this speech, believed in the then popular notion that the Western portion of this country was one vast expanse of mountain and desert. Even Congress

¹ For the history of Irrigation, see Chap. 3, Secs. 63-87.

For the advantages of irrigation,

see the last edition of Irrigation Farming, by Lucius M. Wilcox, 1910, Chap. 2, pp. 12-21.

has unfortunately aided in this popular notion, by repeatedly referring to these Western lands as desert lands. For example there is the “Desert Land Act,”¹ and the many Acts for the reclamation of “desert lands,” hereinafter discussed in this work. The lands referred to in these Acts are not desert lands. They have as rich and enduring soil as any lands on earth, and these Acts of Congress themselves go to show that they are not desert, by providing for their reclamation by the means of irrigation. It is true that many of these lands in their natural state may seem to the Eastern passenger, from the car window, to come within his definition of desert lands. They are mostly covered with a natural growth of sage brush, greasewood, mesquite or some of the other of the many thousands of forms of wild plant life common to the West. But, where these wild plants grow without the artificial application of water, it is a sure sign that the soil producing them is rich; and the heavier the growth usually the richer the soil. By irrigation, anything which can be raised in that particular climate can be grown upon these lands. This is also further illustrated by the many thousands of acres of this land which, in the more recent years, has been successfully cultivated without irrigation under the modern methods of scientific “dry farming.”² To find desert land, in the strict sense of the term, one must look for land absolutely without plant life.

§ 6. Drought and aridity.—Although the great mass of the Western lands can not be described as desert lands, in the strict sense of the term,¹ the most of them are subject to great drought and aridity. Drought is defined as, “dryness; want of rain or water; such dryness of weather or climate as affects the earth, and prevents the growth of plants; aridity.”²

Drought has also been described by a modern poet. And, although a law text book is hardly the place for poetical quotations, this is so applicable to the subject under discussion in this section that we will take the liberty to indulge in this:

The road is drowned in dust; the winds vibrate
With heat and noise of insect wings that sting
The stridulous noon with sound; no waters sing;

¹ See Desert Land Act.

² See Dry Farming.

¹ See Sec. 5.

² Webster's New Int. Dict., 1911, sub.: Drought.

Weeds crowd the path and barricade the gate,
Within the garden Summer seems to wait
Among her flowers, dead or withering;
About her skirts the teasel's bristles cling,
And to her hair the hot burr holds like hate.
The day burns downward, and with fiery crest
Flames like a furnace; then fierce night falls
Dewless and dead, crowned with its thirsty stars:
A dry breeze sweeps the firmament, and west
The lightning leaps at flickering intervals,
Like some caged beast that thunders at its bars.

—By Madison Cawein.

The average rainfall upon the most of the arable lands in the West is small as compared to that in the Eastern and more humid portions of this country. But, upon the other hand, all portions of the country are subject more or less at times to drought. There is no way of preventing it except by having a plentiful supply of water obtained from the streams and other natural sources of supply and available works, so that the water can be artificially applied, when these periods of drought occur. This is always the case in the irrigated portions of our country, but it is seldom the case in the Middle West or in the Eastern portions. The people there have never acquired the habit of "making it rain with a spade." Therefore, even these regions are, at times, subject to long periods of drought, from which there can be no protection, for the reason that the necessary works to apply the water artificially have never been constructed. And, at these times, the only crop which can be successfully raised is the crop of despair, and of this there is, at times a distressing over-production. In the West it is different. The hotter and drier the weather, the greater will be the plant growth; provided always, that there is an ample supply of water artificially applied to stimulate that growth. And, as it is always dry here during the summer season, the necessary works are already constructed, or are rapidly being constructed, and when completed are always maintained in such a condition that they may be immediately utilized when they are needed. Many of the farmers of the arid West prefer that there should be no rainfall during the summer or cropping season, but that all moisture be applied by means of irrigation. They may then turn on the water or withhold it as is thought best for the particular crop. By this method the water is also applied directly to the roots of

the plants. Then, again, a heavy rainfall is decidedly injurious to some species of plants. However, science, in even its wildest flights, has not been able to regulate the rainfall to any great degree.

§ 7. **The value of irrigation.**—It is not always an easy matter to convince mankind how much is really within the power of human skill and industry. In one age, it is impossible to make men realize what the possibilities of the next generation may be. The first settlers in the American colonies would not have then believed, had it been pointed out to them, what improvements, even in the climate, were to follow the draining and cultivation of their lands after the forests had disappeared. Undoubtedly many ages elapsed before the people of Egypt were capable of duly appreciating the full value of the flood of the Nile, and of turning its enriching water to the utmost possible advantage. The treatment and cultivation of the various kinds of soils, the enriching the same by artificial application of silted water, the best application of industry and skill in the methods by which this work is to be performed, and the selection of the various crops best adapted to the different soils, the most economical and careful methods of diverting, conducting, and applying the water to the land, have required time and patience and the study of the best minds of the scientific methods of this and foreign countries, both ancient and modern. All this as it appears today is embraced in one vast system of modern cultivation of the soil, until irrigation is a part of an extensive national economy, embracing the husbandry of nearly every country. In this country, in the present age, by this means, immensely increased crops of all kinds have been raised, even in regions which are semi-arid, and localities which were formerly marked as “desert lands” have been reclaimed and made possible for the habitation of man. An ever increasing population, coming from the cities and the more congested sections, to the localities irrigated have at the same time furnished the labor necessary and the markets for the crops produced.

§ 8. **Irrigation enterprises and mistakes which have been made.**—Upon the other hand, it can not be denied but that mistakes have been committed in the appliance and practice of this

art. Mistakes have been made in its practical workings, mistakes have been made in legislation, and by the courts in construing such legislation. It has been tried in situations where Nature did not favor success, and it has been employed in order to force a product for which there was not an adequate demand. Engineers have miscalculated, and the works constructed under their supervision have gone out at the first flood. Settlers have failed to come and settle under the works as fast as it was anticipated that they would. All this or other misfortunes have led to the ruin of enterprises, and loss to the stockholders and bondholders. And, in many of such cases, or similar ones, the failure has been most unjustly attributed to the art of irrigation itself, when, in fact, it arose from the errors in judgment or foresight upon the part of those who conducted the operations. But without the requisite skill and attention, it is evident that no undertaking can prosper. Errors, therefore, which occur from these causes, ought in no degree to bring discredit on the art of irrigation itself.

Although irrigation projects, carefully instituted and conservatively conducted, are now among the best in the country for legitimate investment, in some localities there was a time when the wild-catter and the speculator, ever watchful for their prey, organized great corporations, sold their stock and bonds in the financial market, and that, too, when the companies did not have the title to one drop of water to run in their canals or reservoirs, if indeed their works were ever constructed except on paper, and also where there were no irrigable lands to which the water could be successfully applied. Even the Wright irrigation district law of California was overworked, for a time, in that State. A number of schemes under the Carey Act also failed. About twenty years ago many companies went into the hands of receivers from various causes; of course, with great loss to those who had invested their money in the same. Settlers were also induced to take up lands under these projects under the promise that water was either then available or would be at a certain time. Many, owing to long delays, in securing the necessary water to cultivate their lands, abandoned them and went elsewhere. For a time, these failures naturally gave all irrigation projects a backset, especially in the financial world. It was hard to sell stock or bonds in even legitimate and worthy enterprises. But

this condition was only temporary. By careful legislation for State supervision upon the part of all the States where these enterprises were being conducted, the wild-cat enterprises have been practically eliminated from operation in all portions of the West. Then, again, by the United States Government taking the subject in hand, and itself constructing enormous irrigation systems, the days of the wild-cat have practically ended along these lines. By having a rival in the National Government in these enterprises, private parties are compelled to have something of substantial value to offer both to capital and to the settlers.

§ 9. Effect of irrigation upon the individual.—Upon the question of economics, one of the greatest benefits of irrigation is upon the individual whose home is in an irrigated section. There was a time, and that time has not passed in some portions of the country, when the farmer was deemed a sort of an isolated personage, dwelling apart from others, and having none of the conveniences, and much less the luxuries, of modern life. He was looked upon with a sort of pity, with the idea that probably the best that he could do was to spend his life upon the farm. His children have grown up; and, seeing the disadvantages of such a life upon the farm, have gone to the cities, which already had a too dense and an over-congested population.

Here, in the West, since the introduction of irrigation projects, all this is changed, or being rapidly changed. Owing to the fact that a small farm well irrigated and cared for will support a family better than a larger one without irrigation, the farmers have nearer neighbors and live together in "farming neighborhoods," or "farming communities." This is beneficial for many reasons. In the first place, "man is a sociable animal," and to live separate and apart from his fellow man is not his natural condition. Under many of these irrigation projects the farmers live in small cities or towns, the land which they cultivate lying at some distance. The average irrigation farmer, if he has been upon his land for some time, usually has a good house, oftentimes of brick or stone, substantial barns and outhouses, electric lights, a telephone, daily rural mail delivery, and many of the conveniences that are not found in city homes. His electric lights are often furnished by the same company from which he secures his water for irrigation; so, too, his telephone, with connections with long distance

lines. By living in communities, he has also within reasonable distance the public school for his children and oftentimes a high school; he has also churches and places of entertainment, stores, banks, and other business houses, where he can dispose of his products and transact his other business. If he is a thrifty man, he ordinarily has money in the bank or loaned out, has his automobile, and is able to purchase other luxuries that are entirely beyond the means of the ordinary city man. And, above all, he is absolutely independent as to how he is to secure a living for himself and his family. In fact, in the irrigated regions of the country, "the poor but honest farmer," as a species, is rapidly becoming extinct, and in his place has come the educated forehanded gentleman, who lives in the country simply because he prefers it, and can secure there better advantages and a more wholesome life for himself and family than he can secure in a large city. Take the same man in the city, and perhaps he might have been able to hold down a clerkship or some mechanical position in some establishment, or he might have attained to the position of a motorman or a conductor on the street railroad. In any one of these positions, it would have been at a meagre salary, and he would have had a constant struggle to "keep the wolf from the door," and have been absolutely deprived of all luxuries, and, oftentimes, of the bare necessities of life. I may be thought by some to have overdrawn the picture. But those who are at all familiar with a well developed irrigated region, will bear me out in these statements. And those who are at all familiar with the life of the average clerk, mechanic, or artisan in the city, know that the remarks as to them are understated.

Since writing the above our attention has been called to that most excellent work by Mr. Lucius M. Wilcox, upon the practical side of the question, entitled "Irrigation Farming," in which he says: "In summarizing the manifold advantages that the irrigation blessing has brought to humanity through all the ages of persevering man, and anticipating those benefits that are to be commanded by 'the nations yet to be,' we may conclude that irrigation means better economic conditions; means small farms, orchards, and vineyards; more homes and greater comfort for men of moderate means. It means more intelligence and knowledge applied to farming, more profit from crops, more freight, and more commerce—because special products of higher grade and better

market value will be enhanced. It means association in urban life instead of isolated farms. It means the occupation of small holdings. It means more telephones, telegraphs, good roads, and swift motors; schools in closer proximity; villages on every hand, and such general prosperity as can hardly be dreamed of by those who are not familiar with the results of even the present infancy of irrigation in America.”¹

The civilizing influence of irrigated agriculture upon the American Indian can not be over-estimated. Through the more modern policy of the Government the Indians are given independent allotments of land and are instructed by experts furnished by the Government in the methods of irrigation. By this means many of the Indian tribes of the Western States have entirely passed from their former savage or indolent condition, and have become respected and industrious people, and in time will be granted full citizenship in this Republic.²

All of the above enters into the economic features of the subject under discussion. And, for one of the causes for the change in agricultural life, that has come or is rapidly coming to the irrigated regions of the West, too much credit can not be given to the State agricultural colleges, and the experiment stations of the United States Government, both of which are established in every State included within the arid West.

§ 10. Irrigation and storage of waters as a means of solving other important questions.—There is another important group of questions looking toward the economic side of the subject of the irrigation of arid lands, and tending toward the solution of other important problems which confront the country at the present time. These are: The question of forests as related to stream flow, hereinafter more fully discussed in a separate chapter of this work; ¹ irrigation as a means of the prevention of floods; ² as an aid to navigation; ³ as aiding in the reclamation of overflowed or

¹ Irrigation Farming: A Handbook for the Proper Application of Water in the Production of Crops, by Lucius M. Wilcox, editor of the *Field and Farm* of Denver, Colorado, edition 1910, p. 21. [The above work is one

of the best written upon the practical side of the question.—AUTHOR.]

² For irrigation by the Indians see Chap. 12, Secs. 271-285.

¹ See Chap. 2, Secs. 40-62.

² See Sec. 11.

³ See Sec. 12.

swamp lands; ⁴ as a conserver of the soil,⁵ and as an aid to the development of power.⁶ All of these subjects are largely related to each other, and concerning which a single comprehensive plan should be, and is being attempted to be adopted by the General Government, through its modern policy of the conservation of its natural resources. Concerning these subjects, President Roosevelt wisely said: "It is the part of wisdom not to adopt a jumble of unrelated plans, but a single comprehensive scheme for meeting all the demands so far as possible at the same time and by the same means."⁷

At the Conference of Governors, held in Washington in 1908, Professor Chamberlain, at the head of the department of geology of the University of Chicago, upon this subject said: "The solution of the problem for the tiller of the soil essentially solves the whole train of problems running from farm to river and from crop production to navigation."⁸ We will take these subjects up and briefly discuss them in the following sections, with the exception of the relation of forests to stream flow, which requires a more elaborate discussion, which will be found in a subsequent chapter.⁹

§ 11. Irrigation as the means of preventing floods.—In a recent bulletin, published by the United States Government, it is stated that the damage from floods in the United States probably exceeds on the average \$100,000,000 annually, and in the year 1908, according to estimates based on reliable data, the aggregate damage approximated \$250,000,000. "Such an annual tax on the property of great regions should be reduced in the orderly progress of government." It goes without saying that any consideration of flood prevention must be based on the thorough knowledge of stream flow, both in the contributing areas which furnish the water and along the great lowland rivers.¹ The forests are the greatest natural conservers of moisture known to man.²

⁴ See Sec. 14.

⁵ See Sec. 13.

⁶ See Sec. 15.

⁷ From the speech of October 4, 1907, at Memphis, Tenn.

⁸ Proceedings, p. 80.

⁹ For the relation of forests to stream flow, see Chap. 2, Secs. 40-62.

¹ Surface Water Supply of the Lower Mississippi Basin, by W. B. Freeman and R. H. Bolster, 1911, Water-Supply Paper No. 276, U. S. Geol. Survey.

² See Chapter, Forests and Their Relation to Stream Flow, Secs. 40-62, and authorities cited.

With their leafy cover, breaking the force of the rain, their porous floor, and friable soil, they absorb the rainfall, and it is thus stored up until it gradually seeps, percolates, or runs by subterranean streams, through the earth into the springs and streams below. By this means a fairly even flow is maintained in the rivers during the entire year. But with the forest at the headwaters gone, no such thing occurs. The rainfall and water from melting snow rushes off the land, fills the streams and rivers to an abnormal height, and thus causes the great floods on the lower lands, which cause so much damage in this country each year.³

By practicing irrigation, man is, in a way, an imitator of Nature. This is accomplished in two ways: First, by taking out the flood water directly from the rivers or their tributaries; second, by constructing great artificial reservoirs wherein the flood water is stored for a time. This water in either case is spread out over vast areas of land through a network of ditches on the upper drainage basins of the rivers and used for irrigation, and, after having accomplished its main object in fertilizing crops, gradually infiltrates back into the streams, at the times when the main flood has passed, and thus insures a regular flow in the rivers below. These lands upon which the water is spread absorb it like a sponge and very slowly give it out by the process of seepage and percolation into the tributary streams of the great rivers. By this means floods may be prevented and at the same time insure a larger flow in the rivers during the dry seasons.⁴

³ See Sec. 55, and authorities.

⁴ See Reclus, *The Earth*, pp. 328-338; Marsh, *The Earth as Modified by Human Action*, pp. 448-453; Shaler, *Aspects of the Earth*, pp. 189, 295; Speech of Francis G. Newlands of Nevada in the Senate of the United States, Vol. 42, Cong. Record, No. 14, p. 500; Vigan, *Etudes sur Irrigations*, 1867; Scott Moneriff, *Irrigation in Southern Europe*, pp. 89, 90.

Speaking of storage reservoirs as a preventive for floods, before the Conference of Governors, held in the White

House, Washington, D. C., May 13-15, 1909, Mr. Lyman E. Cooley, C. E., said: "Floods will be abolished or mitigated, thus claiming the wealth in alluvial lands along the water courses and making the valleys salubrious. The flow of streams will be equalized and made navigable throughout the year, even to the remote reservoir sites."—*Proceedings of the Conference*, p. 350.

At the same conference Mr. Edward Gillette of Wyoming said: "A wonderful work is being performed in the

Practically all of the water withdrawn from the streams and used in irrigation—except that which is absorbed by the vege-

West by conserving flood waters and letting them go back gradually to the streams after having been used on land for irrigation purposes. This work justifies the hearty co-operation of the whole country.”—*Proceedings*, p. 398.

See, also, the speech of the Chancellor of the Chancery Court, Nashville, Tenn., *Proceedings*, beginning p. 376; Floods, by M. O. Leighton, Chief Hydrographer, U. S. Geological Survey, embodied in Vol. 2, p. 95, as part of the report of the National Conservation Commission. See, also, same Water-Supply Paper No. 234, U. S. Geol. Survey.

See, also, the following bulletins of the Office of Experiment Stations, U. S. Dept. of Agriculture, relative to the drainage of swamp lands: No. 147, Report on Drainage Investigations, 1903, by C. G. Elliott; No. 189, Report on the Drainage of Certain Counties in North Dakota, by John T. Stewart; No. 198, The Prevention of Injury by Floods in Neosho Valley, Kansas, by J. O. Wright; No. 230, Report on the St. Francis Valley Drainage Project in Northeastern Arkansas, by A. E. Morgan and O. G. Baxter; No. 234, A Report upon the Reclamation of the Overflowed Lands in the Marais des Cygnes Valley, Kansas, by S. H. McCrory and D. L. Yarnell.

Also, see the following circulars of the same Department: No. 74, Excavating Machinery Used for Digging Ditches and Building Levees, by J. O. Wright; No. 76, The Swamp and Overflowed Lands of the United States, by J. O. Wright; No. 80, A Report upon the Drainage of the Agriculture Lands in the Kankakee River Valley, Indiana, by C. G. Elliott; No. 81, A

Report upon the Drainage of the Agricultural Lands of Bolivar County, Mississippi, by W. J. McEathron and S. H. McCrory; No. 86, Preliminary Report upon the St. Francis Drainage Project in Northeastern Arkansas, by A. E. Morgan; No. 103, The Drainage Situation in the Lower Rio Grande Valley, Texas, by L. L. Hiding; No. 104, Preliminary Report on the Drainage of the Fifth Louisiana Levee District, by A. E. Morgan, S. H. McCrory, and L. L. Hiding.

See, also, the following documents issued as “Separates” by the Agricultural Department: No. 845, Report of Drainage Investigations, 1904, by C. G. Elliott, same in Office of Exp. Stas. Bul. No. 158, Separate No. 9; No. 925, Drainage Investigations, by C. G. Elliott, same in Annual Report of the Office of Exp. Stas. for 1905; No. 1028, Reclamation of Tide Lands, by J. O. Wright, same in Annual Report of the Office Exp. Stas. for 1906; No. 1136 Progress in Drainage, by C. G. Elliott, same in Annual Report of the Office of Exp. Stas. for 1907; No. 1222, The Alluvial Lands of the Lower Mississippi Valley and Their Drainage, same in Annual Report of the Office of Exp. Stas. for 1908; No. 1315, Reclamation of Southern Louisiana Wet Prairie Lands, by A. D. Morehouse, same in Annual Report of the Office of Exp. Stas. for 1909; No. 1386, Drainage Investigations, 1909-1910, by R. D. Marsden, same in Annual Report of the Office Exp. Stas. for 1910.

Also, see the following miscellaneous documents issued by the same Department: Sen. Doc. 443, 60th Cong., 1st Ses., Swamp Lands of the United States; House Doc. 1180, 61st Cong.,

tation, and that which is carried off by evaporation—is finally restored to the river below either by superficial flow or infiltration.⁵ This restoration is not immediate, and it may take more than one season or even years for the water to find its way into the river below, but it eventually gets there. Hence a stream on the upper headwaters of a river may be entirely diverted and applied to irrigation during the summer months; this would have almost an immediate effect to lower the flow in the river, at least until the seepage began to get through. Therefore the diversion of water during any other period of the year than that of flood water might be an almost immediate injury to the industries on the river below depending upon the water supply in the river. Upon the other hand, the diversion and storage of the waters of a river, or its tributaries, during the high water or flood season, has exactly the reverse effect. It tends to prevent the floods in the lower reaches of the river at times of high water; and, afterwards, lets it down during the period of low water, and thereby maintains a more equable flow in the river.⁶

§ 12. Irrigation as an aid to navigation.—Not only can irrigation be made a means of preventing floods, but it may also be made a great aid to the inland navigation, or navigation of the rivers and lakes of this country. As has been seen in the previous section, and will be seen in our discussion upon forests and their relation to stream flow,¹ that unless the water of a drainage basin is stored either by Nature through its forests, or by man in an artificial way, that the greater portion of the water from

3d Ses., Expenditures for Drainage Investigations; Bul. 3-B, Preliminary Report upon the Drainage of the Lands Overflowed by the Forked Deer and the Obion River in Gibson County, Tenn., by E. A. Morgan and H. S. McCrory; Bul. 25, A Preliminary Report on Drainage Reclamation in Georgia; Bul. 110, Installation of an Experiment Drainage System, by John T. Stewart (for this address Supt. Northwest Experiment Farm, St. Paul, Minn.); Report of the Iowa State Drainage Waterways and Conservation Commission, 1910 (for this ad-

dress Secy. of State, Des Moines, Iowa).

See, also, House Document No. 1180 for a classified list by States of surveys conducted by drainage investigations, giving the approximate number of acres benefited and the amounts expended.

⁵ Marsh, *The Earth as Modified by Human Action*, pp. 450, 451.

⁶ See, also, *Irrigation as an Aid to Navigation*, Sec. 12.

¹ See Secs. 40-62, and authorities cited.

the rainfall, or from melting snows, runs off almost immediately. When this is the case, it follows as a natural consequence, that during the dry seasons of the year, the rivers below are much lower, than they were formerly, when the upper drainage basins were forested; and at times they get so low that some of our rivers formerly important for navigation can not be used for that purpose at all.

Professor Shaler, of Harvard University, one of the greatest authorities upon this subject, says: "With the removal of the forests, the winter floods increase in magnitude, and the summer droughts leave so little water in the streams that they are constantly becoming less serviceable for navigation."² In fact the inland navigation of this country has been so injured from this cause that it has been called to the attention of the people and Congress in a number of messages of our presidents, and also Congress has taken the subject up in the matter of the Inland Waterway Commission Bill.³

By irrigation the flood water is stored for a time, either in reservoirs constructed for this purpose, or in the soil itself, or both.

² Shaler, *Aspects of the Earth*, 1890, p. 293.

³ For text of bill, see Vol. 42, Cong. Record, No. 14, p. 497; and for discussion upon bill by Senator Newlands of Nevada, see *id.*, pp. 497-513.

The Inland Waterways Commission was appointed by President Roosevelt in 1907, and was the outgrowth of the agitation which had been conducted for some time prior thereto, particularly in the Mississippi Valley, for the improvement of our waterways. The President had been appealed to to recommend legislation to Congress on this subject, and, with his usual thoroughness in such matters, had determined to exhaust investigation before making his recommendations. He therefore appointed this Commission, composed of men who, either in legislative or in administrative work, had enjoyed exceptional opportunities of studying the problems relating to the

waterways of the country. The President selected as chairman of the Commission the Hon. Theodore Burton of Ohio, who had for years been the chairman of the Rivers and Harbors Committee of the House. The additional members of the Commission were Mr. John H. Bankhead of Alabama, the leading minority member of the Rivers and Harbors Committee of the House, but now United States Senator from Alabama; Senator Warner of Missouri, and Senator Newlands of Nevada. The administrative and scientific members of the Commission were General Mackenzie, chief of the Engineer Corps of the Army; Dr. McGee, a noted scientist and naturalist; Mr. Newell, chief of the Reclamation Service; Mr. Pinchot, chief of the Bureau of Forestry; Mr. Smith, chief of the Bureau of Corporations. The primary purpose of this inquiry is to facilitate water transportation,

This water slowly infiltrating or being let down in the time of the summer droughts finds its way to the lower rivers, and, in a degree, compensates for the deficiency in the flow of those rivers during that season, caused by the destruction of the forests. By this means the rivers that were navigable in the early history of our country may have their summer flow restored. As Senator Newlands said in his speech in the Senate of the United States upon the Inland Waterway Commission Bill, speaking about storing the flood water: "These plains absorb the water like a sponge and gradually give it out by process of seepage to the tributary streams of the great river. Give it out when? Give it out when it is most needed for navigation, during the months of July, August, and September. So irrigation is the proper method of treating the river for navigation, for it is one method of impounding the flood waters of these tributary streams; preventing those flood waters from creating destruction below in the spring and preserving them for a beneficent purpose later on in the summer and fall months."⁴ In the Conference of Governors called by President Roosevelt in 1908, Mr. Andrew Carnegie said: "In conclusion, Mr. President and Governors of our States, it seems to me our duty is: First, conservation of forests, for no forests, no long navigable rivers; no rivers, no cheap transportation. Second, to systematize our water transportation, putting the whole work in the hands of the Reclamation Service, which has already proved itself highly capable by its admirable work."⁵

Mr. Lyman E. Cooley, C. E., in speaking of the value of the storage of waters for this purpose, said: "The flow of streams will be equalized and made navigable throughout the year, even to the remote reservoir sites, and by improvement of these channels and by connecting the water systems at vantage points, a great transportation agency will be evolved as a complement to our railway

upon which the prosperity of the country so much depends. The reports of this committee were made to Congress from time to time, and are now available.

⁴ Vol. 42, Cong. Record, No. 14, p. 500. See Secs. 54, 55.

See, also, Shaler, *Aspects of the Earth*, pp. 293-295; Fernow, *Economics of Forestry*, 1902, pp. 74, 75; Marsh, *The Earth as Modified by Human Action*, p. 451.

⁵ Proceedings of Conference of Governors, 1908, p. 24.

system, and as a necessity for our larger growth and complete development." ⁶

§ 13. Irrigation as a conserver of soil.—It was said by President Roosevelt in his Memphis speech: "It is computed that one-fifth of a cubic mile in volume, or one billion tons in weight of the richest soil matter of the United States, is annually gathered in storm rivulets, washed into rivers, and borne into the sea. The loss to the farmer is in effect a tax greater than all other land taxes combined, and one yielding absolutely no return." ¹

The annual loss to the people of the United States through soil wash is far greater than can be easily conceived. The stripping away of the forests has left the soil, in many parts of the country, a prey to torrential floods. This soil, by being washed away, not only leaves the country from whence it came

⁶ Proceedings Conference of Governors, p. 350.

See, also, *Transportation by Water*, by Herbert Knox Smith, Commissioner of Corporations, Vol. 2, pp. 13-58, Report of the National Conservation Commission.

¹² The Roosevelt Policy, p. 624.

See, also, *Washed Soils, Farmers' Bulletin No. 20*, U. S. Dept. of Agri.; A special contribution to Soil Erosion, prepared for the Secretary of the Interior, by W. J. McGee; *The Beginning of Agriculture*, by W. J. McGee; *Rock, Weathering and Soils*, by Dr. Geo. P. Merrill of the National Museum; *Soils*, by Professor F. H. King; *Soil Physics, Soil Management and Soils*, by Professor E. W. Hilgard; *Exhaustion and Abandonment of Soils, Testimony of Milton Whitney*, chief of the Division of Soils, before the Industrial Commission, 1901, U. S. Dept. Agriculture, Report No. 70; *Soil Fertility*, by Milton Whitney, *Farmers' Bulletin No. 257*, U. S. Dept. Agriculture; *The Chemistry of the Soil as Related*

to Crop Production, by Milton Whitney and F. K. Cameron, *Bulletin No. 22*, Bureau of Soils, U. S. Dept. Agriculture.

See, also, the chapter herein on forests as related to stream flow, Chap. 2, Secs. 40-62, and authorities there cited; Address on Soil Wastage, by T. C. Chamberlain, head of the Dept. of Geology of the University of Chicago, at the Conference of Governors, Washington, 1908, *Proceedings*, p. 75; Address of R. C. Van Hise, President National Association of State Universities, at the same conference, *Proceedings*, p. 426.

See, also, address of President Taft at Kansas City, Mo., Sept. 25, 1911, Office of the Secretary, Circular No. 38, U. S. Dept. Agriculture.

See, also, article on Denudation, by R. H. Dole and H. Stabler of the water resource branch, U. S. Geological Survey, Vol. 2, pp. 126-140, Report of the National Conservation Commission; same in *Water-Supply Paper No. 234*, p. 78.

bare, in many places even down to the solid rock, but also the soil itself with great masses of sand and rock is carried down the streams and rivers and is a great source of damage where it lodges. It often destroys navigation; it also raises the beds of streams and causes them to overflow the low lands, and often causes them to permanently change their courses, thereby destroying vast amounts of valuable property. And, not only this, but the good lands even along the upper reaches of the river system are covered up by the debris and rendered practically worthless.²

A comprehensive scheme of irrigation systems in this country will do much toward the conservation of our soils. By the storage of the waters in times of flood or high water, the floods themselves will, in a measure, be averted. Such systems, when properly administered, operate to extend the alluvial belt of the rivers and streams by taking the water from them charged with silt and sediment and distributing it over the surface of the lands in such a manner that the silt is retained in the soil where it is first deposited. It thereby becomes a benefit instead of an injury, as is the case where this silt is carried down to the lower reaches of the rivers. The systems of banks, ditches, and ridges, which have to be constructed on irrigated fields, also tend greatly to prevent the violent washing away of the soil in times of flood.

§ 14. Irrigation as aiding in the reclamation of swamp lands.—More than 70,000,000 acres of the richest land in this country are now practically worthless or of slight value by reason of overflow and swamp conditions. When this land is drained it becomes exceedingly productive and its value increases many fold. It is claimed that by the reclamation of these lands at least \$700,000,000 would be added to our national resources. The study of the run-off is one of the first subjects to consider in connection with the drainage projects of any of these lands. If by the drainage of a large area of swamp land into any particular channel, that channel becomes so gorged with water, which it had not hitherto been called upon to convey, the water is bound to break out and flood other lands below where previously it was not subject to inundation. In such a case, it results merely in an exchange of land values, and, probably great damage to the

² See *Forests as Related to Stream Flow*, Chap. 2, Secs. 40-62.

owners of the newly flooded lands. I do not understand that this is the object of drainage improvement.

Upon the other hand, the holding back a considerable portion of the flood water of our great river systems in great reservoirs for the purpose of irrigation is already having the effect in aiding in the reclamation of swamp lands along their lower reaches. And, as greater storage works are constructed and utilized, this result will become greater and greater; and, at the same time, the water held up may be used for irrigation of arid lands, and for power purposes. It can be readily seen that, if the water of a river system is held up, and a considerable portion of the same is not permitted to flow down during the periods of high or flood water, the low lands adjacent to the lower portions of the river are not as liable to be newly flooded, and at the same time the main channel of the river will be kept open for the drainage of these low lands.¹ This as well as the other subjects discussed in this portion of this chapter comes within the suggestion of President Roosevelt in his Memphis speech for a single and comprehensive scheme for meeting all demands as far as possible.²

§ 15. Irrigation as an aid in the development of power.—As our coal and timber lands are becoming depleted, it is becoming a serious question as to from what source we are to obtain power, heat, and light. Nor are our apprehensions entirely for future generations, but the effect of the increased demands and the scarcity of the supply of coal and wood are now felt by the present generation as is manifest by the greatly increased prices of these products. And in this respect, the development of the water power of the country has become a National economic necessity. "Industrial growth, and as a consequence the progress of the United States as a nation will cease if cheap power is not available."¹ Water supply affords the only known source now open

¹ See Surface Water Supply of the Lower Mississippi Basin, by W. B. Freeman and R. H. Bolster, Water-Supply Paper No. 276.

See, also, for a kindred subject, Tidal Marshes and Their Reclamation, by George M. Warren, 1911, Bulletin No. 240, Office of Experiment

Stations, U. S. Department of Agriculture.

² 2 The Roosevelt Policy, p. 625.

¹ Surface Water Supply of the Lower Mississippi, by W. B. Freeman and R. H. Bolster, Water-Supply Paper No. 276.

to supply this deficiency. And when the electric transmission of power was accomplished the relation of our water powers to National economy was entirely changed.²

As stated by M. O. Leighton, Chief Hydrographer of the United States Geological Survey, and embodied as a part of the National Conservation Commission: "The construction of reservoirs necessary to prevent floods, would, under proper management, involve an increase in the water-power possibilities of the United States equal to about 60,000,000 horse-power."³ In this country, during recent years, the development of electrical energy, for the purpose of transmitting the same to distant parts for use, in connection with irrigation projects, is becoming a common industry. This is especially true of the Reclamation Service working under the National Reclamation Act, but it is also true of private, State, and municipal projects. Neither enterprise is injured by the other in the slightest degree, and both can be worked together; and, furthermore, it is only by this means that the water can be made to do duty to its fullest possible capacity.

§ 16. The theory of irrigation.—The fact that water artificially applied to lands produces crops upon some portions which were absolutely barren without it, and increases the yield upon others, may be attributed to the following causes: First, as the temperature of the water is rarely below ten degrees Fahr. above freezing, it prevents the frosts in winter from injuring the plants by heaving the soil, raising the roots to the surface and freezing them; the growth, especially of the roots, is encouraged. Second, nourishment is brought to the soil in the shape of sediment and mineral substances carried in solution which are of the nature of plant food, and which are absorbed and retained both for imme-

² See the Public Utility of Water Powers and their Governmental Regulation, by Rene Tavernier, Chief Engineer of the public works of the Republic of France, and Marshall O. Leighton, Chief Hydrographer, U. S. Geol. Survey, 1910, Water-Supply Paper No. 238.

See, also, for the development of power and power rights, Chap. 47, Secs. 847-855.

³ Vol. 2, p. 111, Report National Conservation Commission; for the same, see Water-Supply Paper No. 234, p. 27.

See, also, for the report upon Developed Water Powers, Vol. 2, p. 141, same Report; and also Water-Supply Paper No. 234, p. 28; and on Undeveloped Water Powers, Vol. 2, p. 159, same Report; and also Water-Supply Paper No. 234, p. 46.

diate and future use. Third, the plant food already present in the soil itself is by the action of the water brought in contact with the roots of the plants; and lastly, the retention in the soil of the various plant foods prevents it being worn out at the end of a few seasons, and constantly improves it. To the united agency of the above named causes may safely be attributed the benefits that arise from irrigation. It also appears that there is a great benefit derived from the mere contact of abundance of moving water of an even temperature with the roots of the various plants. Why can not crops be grown without irrigation, in a dry desert country? It is simply because the amount of moisture evaporated from the surface of leaves and stems in our commonly cultivated food plants is so much greater in an arid climate than the amount which is naturally furnished to their roots to absorb that the plant dries up and dies. There are many species of native plants in our most arid lands,¹ but their tissues are so constituted that the process of evaporation, or transpiration,² as it is called in vegetable physiology, is exceedingly restricted, and therefore additional moisture is not needed to promote their growth, even under conditions of great drought, when transpiration is most rapid. Upon the other hand, nearly all of our food plants have originated in, and are natives of humid climates, and are therefore incompetent to cope with the hot, dry soil and atmosphere of an arid climate, without an additional supply of moisture being artificially furnished. The most perfect and the most natural key to the natural agricultural capacity of any region, outside of a chemical analysis of the soil, is the character of its original vegetation. In plants of an arid region, the thick cuticle, the covering of felted hairs, the reduced leaf surface, as well as the size of the plants themselves, and the almost sombre grey colors are some of the evidences of aridity. In the humid regions, the plants are larger, they have broad, thin leaves and a bright green color, and an absence of the protective hairy blanket, which are all evident signs of adaptation to different conditions of humidity. But where the native plants grow with the supply of moisture, which Nature alone furnishes, it is ar-

¹ We are considering arid arable lands and not actual desert lands.
For the distinction between arid

lands and desert lands, see Sec. 3.
² For transpiration, see Sec. 28.

gued, and correctly, that the food plants, which can be grown in that particular climate, can be grown upon these lands, with the additional moisture, necessary for their existence and successful production, artificially supplied by irrigation. The physiological effect of irrigation is then to furnish, for absorption by the roots of the plants, sufficient moisture to balance the excessive amount transpired from their leaves.

§ 17. **Special benefits from irrigation.**—In what manner, then, does water applied by irrigation operate in fertilizing barren soils, and increasing their product? Besides supplying the deficiency in moisture to the roots of the plants, as an element itself it furnishes direct supplies of food which are partly required for plant life. As a medium for moderating the temperature of the climate, it lessens the rigors of the intense cold in some regions, and of intense heat in others. As a destroyer of noxious weeds and of insects, it often entirely extirpates these when under proper direction. As a means of conveying fertilizing and enriching substances to the soil, and therefore adding to the necessary plant food, it may be used with great success. In an irrigated country “worn out” soils, so common to the New England States, are almost unknown. In the various modes of operation there occur numerous features, varying with the localities and their surroundings, and all these must be well considered in order to secure most of those beneficial effects which water is qualified to promote by means of irrigation. It follows, therefore, that great attention ought to be given to the qualities of water intended for the purpose; and that before incurring great labor or expense in the application of it these qualities ought first to be known. This may be done partly by analysis, but most certainly by experiments conducted on a moderate scale, until it is fully determined just what is best under all circumstances of the case. In general, spring waters are very fertilizing and possess an equable temperature, but impregnations of iron and some other minerals are quite frequent, especially in mountainous districts, even in springs, and should be avoided; mountainous streams which hold lime in solution are very fertilizing; such streams as convey enriching sediment and silt are the best and most effectual for permanent improvement of the soil.

The natural produce for which irrigation is best adapted, in particular soils and climates, comes next under consideration. Here the mere operator is not always a competent judge, and it may require careful observation and analysis of the soil and, perhaps, actual experiments, to ascertain the facts.¹ But there is no doubt that they may be ascertained with a considerable degree of certainty before a great deal of expense has been incurred.

The questions of the character of the soil and water, and the crops which a combination of the two will nourish and produce most successfully, being settled in the first place, the operator must then consider the population and the markets of the district for his products, his own demands, and the amount of competition that he may have. All these questions must be carefully considered in his determination of the nature and extent of the irrigated crops which he will plant or sow, and from which he may expect to derive the most profit.

§ 18. To what crops irrigation is best adapted.—In the selection of the crops which the irrigator is about to plant or sow, first and foremost, due regard must be had of the climate where the opera-

¹ For the relation of soils to irrigation, see *Irrigation Farming*, by Lucius M. Wilcox, 1910, Chap. 111, pp. 22-35; *Primer of Irrigation*, Anderson, 1905, pp. 54-66.

See, also, the various bulletins issued by the U. S. Department of Agriculture, Bureau of Soils.

For several years the United States Interior Department has conducted the United States Geological Survey and has issued what is known as "Water Supply and Irrigation Papers." Also the United States Department of Agriculture has issued two sets of bulletins known as "Irrigation and Drainage Investigations," and "Farmers' Bulletins." These bulletins are written by most eminent men and treat the subject from every phase of the scientific standpoint. The most of these bulletins

are accessible and can be obtained from the respective Departments of the Government.

For the practical irrigator, *The Primer of Irrigation*, by D. H. Anderson, editor of *The Irrigation Age*, Chicago, 1905, will be found a most valuable work; and also the current numbers of *The Irrigation Age*, where these questions are discussed at length.

See, also, *Irrigating the Farm*, by L. M. Wilcox, Denver, the editor of the *Field and Farm*, and also the current numbers of that periodical; also see *Irrigation Farming*, same author, 1910; also, *Irrigation for Farm and Garden*, Stewart; *Irrigation and Drainage*, by F. H. King; *Irrigation in the United States*, by F. H. Newell, Director of the National Reclamation Service.

tions are about to be carried on. It would be a vain undertaking to attempt to raise, for a profit, oranges in North Dakota or cotton in Montana. But, barring the climatic consideration, any crop can be grown by irrigation that can be grown without it, and with a much greater yield, and usually of a better quality.¹

There is an impression among some, especially in the Eastern States, that irrigation can be successfully applied only to certain branches of agriculture; that horticulture is the industry especially benefited by it, and that as to any other crop it does not much better the condition, financially or otherwise. It is true that fruit culture will usually give larger returns per acre under irrigation than most other branches; but it is also true that it does this under ordinary conditions. The desirable results of a more certain crop and a larger yield are just as certainly secured with wheat, corn, alfalfa, and potatoes as with oranges, lemons, and apples. Sugar beets are easily raised at what would be called an enormous profit to the Eastern farmer; and great dividend paying corporations for the manufacture of sugar have sprung up in many portions of the arid West.² Stock and horse raising are also much benefited by irrigation, as the pastures may always be kept green and fresh, and great crops of hay and fodder may be produced. Alfalfa, or lucerne, the great forage crop of the arid regions of the United States, is made to yield from two to five crops a year, which aggregate a tonnage it would be impossible to secure from any meadow under ordinary conditions in the Eastern States, and which in value will closely rival a productive fruit orchard. Grain crops and potatoes may likewise be increased, and almost every product known to agriculture will not only yield more, by this method, but will also give a greater return above the cost of production. Especially valuable is irrigation in the raising of vegetables, melons, and garden produce. Near the cities and towns of the arid region, the market gardeners, upon a patch of ground of from one to five acres, properly irrigated, can raise an amount of garden truck that surprises the market gardeners of the Eastern States, who depend entirely upon the rain-

¹ For the particular features of each State in the arid region, see Part 14.

² Progress of the Beet-Sugar In-

dustry in the United States, 1904, by Chas. F. Saylor, Special Agent; Primer of Irrigation, Anderson, 1905, Chaps. 7, 20, 22, pp. 218-245.

fall. The Eastern gardener requires a much greater area of land to produce the same amount of crops than is required in the West under irrigation. It is for this reason that the National Reclamation Service, under some of the projects constructed by the Government, has fixed the farm unit as low as ten acres; this amount of land being deemed sufficient for a man to well support himself and family.³

One of the greatest proofs of the value of irrigation lies in the fact that no farmer, who has once practiced it, is willing to return to the pursuit of agriculture in any part of the country where he would be entirely dependent upon the uncertain rainfall.

§ 19. The effect of irrigation upon the climate.—The effect that irrigation has upon the climate of a certain designated section of a country requires a careful study of the physical conditions of the given locality. It also requires a comparison of the meteorological data for a considerable period of time while the arid conditions prevailed, with similar data after the same territory has been brought under irrigation. Owing to the fact that this data is not always obtainable, especially before the section was irrigated, just what effect irrigation in a naturally arid region has upon the climate of that particular region is an inherently difficult problem under the most favorable conditions, and the research for the solution of the same must cover a considerable period of time. Captain William A. Glassford of the United States Signal Corps, and a high authority upon this subject, writing in regard to the climate of Arizona, says: "In the hottest parts of this arid region the midsummer weather is not only endurable, but even enjoyable and refreshing. These are facts as they exist now, when the present conditions—the bare soil, etc.—are specially conducive to high temperatures. But it may be readily conceived that there will take place salubrious modifications, as some of us have already realized, when these desert places are covered with the green carpet of alfalfa and the verdure of trees."

From investigations made by the United States and by various scientists it has been found that irrigation has a slight influence in increasing the moisture in the surrounding air, for the follow-

³ For the National Reclamation Act, see Chap. 65.

See, also, the annual reports of the Reclamation Service.

ing reasons: That the moisture is evaporated as an invisible gas; that the greater portion instantly rises with great velocity to a point in the atmosphere where the temperature is below dew point, where it becomes visible in the form of clouds, but which are usually driven from over the place from which the moisture first arose by the prevailing wind. But a very small portion of the evaporated moisture is retained in the lower and warmer strata of the air. It is generally considered that the effect of the moisture which is drawn off from irrigated fields slightly tends toward increasing the humidity of the atmosphere of the particular section from which it was drawn. But as far as temperature is concerned, irrigation cools the atmosphere for the reason that the hotter the air the greater is the evaporation from the irrigated ground. This evaporation lowers the temperature of the region where the irrigation is practiced and of the surrounding air. Although the condensation of the vapor may not take place within days of time and many miles distance from the place where it was exhaled from the surface, a local refrigeration must accompany a local evaporation. Hence, although the summer temperature of an irrigated region may be high, we are warranted in affirming that it must have been still higher before the introduction of irrigation, and would again become so if that practice was discontinued.¹

§ 20. The effect of irrigation upon the rainfall.—The only effect that irrigation can have upon the rainfall, is upon what is called the secondary rainfall; that is to say from the moisture that is evaporated from an irrigated area and returned in the form of showers to that locality. The fact that there is a very considerable precipitation in those localities in the summer months, where irrigation is now practiced, and where prior to its practice the summer rainfall was very small, is a strong argument in its favor. The atmosphere of a locality, especially where the climate is very hot, is naturally exceedingly dry during the period of irrigation, but it receives immense quantities of moisture from the irrigated soil, and from the plants, which, if not driven elsewhere by the wind, are condensed by the colder strata of the air into what is called secondary rainfall. The greater the area irrigated,

¹ Marsh, *The Earth as Modified by Human Action*, p. 449.

See, also, the chapter on forests as related to stream flow, Secs. 44-46.

the greater this is noticed. This is so from the fact that the clouds, moisture laden from the irrigated lands, are oftentimes caught up by the winds and carried to other regions where they may precipitate their moisture. It often occurs that these clouds in floating through the air encounter mountain ranges, adjacent to the valleys from which the moisture was drawn, and there precipitate their moisture. This is the cause of many of the local showers in the mountains, although it may not rain in the adjacent valley. These showers sometimes add to the water supply of the same drainage basin, during the summer periods, when the water is needed the most, for irrigation in the valley.¹ Professor Shaler, in speaking of the loss of the forests causing a loss of the secondary rainfall, says that the rapid extension of irrigation, which is sure to take place in the more arid sections of this country, will afford a similar, and, perhaps in time, an equal supply of moisture for these secondary rains.²

§ 21. The effect of irrigation upon health.—A discussion of the effect that irrigation has upon the health of the inhabitants of a community, where the land is cultivated by that method, requires a study of the physical and meteorological data both before and after the land was so cultivated. It also requires a study of the percentage of humidity most conducive to health, with the prevailing temperatures, altitude, and the movements of the wind, and the determination of actual and ascertained general effects, as shown by the freedom from disease, or the contrary, in the community, and by vital statistics. Also, each of these elements of the problem must be studied in its relation to each and all of the others.

It is universally conceded that an atmosphere carrying too much moisture is unfavorable to perfect health. It is equally certain that the air may be too dry. In an arid country, without irrigation, the moisture in the atmosphere is sometimes so little as to interfere with health and comfort, and produce feverish conditions. The evaporation of water from irrigated lands supplies

¹ See the chapter on forests as related to stream flow, Sec. 47, and authorities cited.

Modified by Human Action, 1884, pp. 448, 449.

See, also, Marsh, *The Earth as*

² Shaler, *Aspects of the Earth*, 1890, p. 295; see, also, pp. 273, 274.

this deficiency to the air and obviates the injurious tendencies. It is well known that a well-shaded dwelling in the midst of an alfalfa field is much cooler than the same residence surrounded by bare ground. This is due in part, perhaps, to the absence of reflection from the earth, but chiefly, I think, to a similar slight refrigeration of the air by evaporation of the moisture in the earth and vegetation of the surrounding field. The effect becomes still more marked when a gentle breeze is blowing. In an arid country, during the summer months, the air is so dry that the midday registration of relative humidity ranges from six to fifteen per cent. It rarely goes above the latter point, and in sections of the same part of the country, where irrigation is not practiced, it drops still lower, which is not desirable to general healthfulness. The conclusions from this point to the fact that the evaporation of moisture from irrigated surfaces slightly increases the moisture in the air and promotes the healthfulness of both animal and plant life. The above rule applies, however, only to arid countries. There is one very noted exception, and that is where irrigation is applied to the cultivation of rice in the Southern States and in other countries. In these localities irrigation has been proven to be a positive injury to the healthfulness, especially for the white man.¹

§ 22. The effect of irrigation on summer frosts.—The question of the effect which irrigation has in increasing or decreasing the summer frosts which occur in certain portions of the arid and semi-arid regions is one of deep interest to the residents of these districts. At first glance it would seem that the wetting of any considerable areas of land would have the effect of cooling the atmosphere and increasing the probability of frost, for it is within the experience of many that low, wet, or marshy lands are very much more subject to frost than the high and dry bench lands. However, the data obtainable regarding the experience of certain

¹ See Marsh, *The Earth as Modified by Human Action*, pp. 452, 453; Es-courrou-Milliago, *L'Italie a propos de L'Exposition de Paris, 1856*, p. 92. But see Carlo Livi, *Della coltivazione del Piso in Italian*, in the *Nuova Antologia* for July, 1871, p. 599.

3—Vol. I—Kin. on Irr.

According to Florence Nightingale, in India, fever rarely occurs in a village surrounded by rice swamps, as long as the water is moving—living, as the natives say. The fever begins when the water falls and stagnates.—*Life and Death in India.*

of the States and Territories in this country upon this subject leaves no room for doubt that the application of water through irrigation has quite a contrary effect to that mentioned, and that the recurrence of summer frost has been diminished thereby. This has also been the experience in Canada, where summer frosts are quite common, and it has been proven to be a fact that in certain of the irrigated areas in the central and northern portions, much disappointment and loss was experienced in the early days of irrigation owing to summer frosts, and that in these same districts the recurrence of frosts is becoming much more rare, and crops are now successfully raised, which, owing to their susceptibility to frost, would not have been attempted by the most sanguine many years ago. It will be also of interest to note that in Southern Alberta, Canada, it has been the experience that irrigated crops were untouched by frosts, while adjoining unirrigated portions were destroyed; this was true in the case of vegetables as well as grain.¹

From a careful consideration of the facts obtainable upon this subject it may be safely assumed that among the beneficial results, which will accrue to our arid and semi-arid regions from irrigation, not the least important will be the favorable influence which it will have in diminishing summer frosts.

§ 23. The natural distribution of water diverted for irrigation.—There would seem to be no end of tolls on the water diverted from its natural source for irrigation before it reaches the plants it is intended to nourish. To such an extent is this true that the amount actually utilized by the vegetation frequently bears but a small percentage to the volume diverted. Some loss is necessary under every known condition; but the amount of the loss varies greatly according to the varying conditions and character of the soil, the nature and character of the diverting and conducting works, and preparation of the land where the water is to be applied. For example, for every cubic foot of water per second which passes through the headgate, 30 per cent of the same is liable to be lost in seepage or leakage from the ditch or canal before the field is reached. Then in applying the remaining 70 per cent, if the surface of the land is uneven, a large portion will

¹ Irrigation in the Northwest Territories, 1902, p. 65.

flow into the low places and be partially wasted, while the higher places may remain dry. In this way probably not more than 50 out of the 70 per cent reaches the land in such a manner that the plants growing thereon are actually benefited.¹ Now having moistened the soil with these fifty inches, the chances are that at least twenty inches will pass off into the air by evaporation without benefiting in the least degree the plants which it was intended to nourish. Thus of the one hundred inches only thirty may fulfill a useful purpose, and pass through the tissues of the plants and be transformed, or transpired, into vapor at the leaves, and a very small portion used by the crop and stored in the tissues of the plants or its fruit. These subjects of seepage, evaporation, and transpiration will be discussed, in a most general way, in the following sections.²

§ 24. Seepage water—Definitions and description.—The water contained in the open spaces occurring in clay, sand, gravel, and

¹ For the economic use and the suppression of waste, see Chap. 49, Secs. 847-916.

For the duty of water, see Secs. 902-908.

See article on Water Circulation and Its Control, by Bailey Willis of the U. S. Geological Survey, Vol. 2, pp. 687-710, Report of the National Conservation Commission, 1909; Losses of Irrigation Water and Their Prevention, by R. P. Teele, Annual Report of the Office of Experiment Stations for the year ending June 30, 1907, U. S. Dept. of Agriculture, pp. 369-386.

² The subjects of leakage losses, and the loss of water by faulty and crude methods of distribution, by unskillful application, and by negligence in not properly preparing the land to receive the water, and by surface runoff, will be discussed under the subjects of Wasting Water, Secs. 911-916, and Duty of Water, Secs. 902-908.

Upon the subject of the proper construction of ditches, canals, and other

irrigation works, see Irrigation in the United States, by F. H. Newell, Chief of the Reclamation Service of the United States; Irrigation Engineering, by Herbert M. Wilson; Irrigation and Drainage, by F. H. King.

Upon the subject of the proper preparation of the land for irrigation, see The Primer of Irrigation, by D. H. Anderson, editor of *The Irrigation Age*, Chicago; Irrigation for the Farm, by L. M. Wilcox, editor of the *Field and Farm*, Denver; Irrigation for the Farm and Garden, Stewart. The above works can all be procured from the D. H. Anderson Publishing Co., 30 North Dearborn Street, Chicago, Ill.

See, also, the many bulletins published by the United States Government by the Departments of Agriculture and the U. S. Geological Survey.

See, also, the biennial reports of the various State engineers of the Western States, and the many bulletins issued by the various agricultural colleges of these States.

other materials of which soils and subsoils are composed, is known by various names, such as "soil moisture," "ground water," "ground storage," "subsurface supply," and the like. When this ground water moves down an inclined stratum of porous materials, the term "seepage water" seems to be more appropriate than that of "ground flow," which many writers have recently used. "Seepage water" conveys the idea of lateral motion, but when one uses the terms "soil moisture," "ground water," or "underground water," this conception is usually not implied.¹

The term "seepage water" is used by irrigators to designate the water which reaches the lowest grounds or the stream channels, swelling the latter by imperceptible degrees and keeping up the flow long after rains have ceased and the snow melted. The word "seepage" is applied particularly to the water which appears in spots below irrigation canals and cultivated fields, usually some months and even years after irrigation has been introduced, and which tends to convert the lowlands into marshes and gives rise to springs, which in turn may be employed in watering other fields. The importance of a thorough knowledge of the behavior of seepage water is obvious when consideration is given to the close relationship which exists between the available water supply and the material prosperity of an arid region where irrigation is practiced. This is particularly true in those regions, where every available source of supply has long since been utilized and where the rapidly increasing agricultural population necessitates the complete utilization of all water obtainable, and that too without unnecessary waste. In countries where irrigation is practiced, it is often the case that, though the streams may be drained dry by the diversion of water into irrigation canals, not far below the stream will again be of considerable size, and this without the flow of visible tributaries. This has become a question of great importance, both economic and legal. And the acquisition of the right to use seepage waters requires the most careful measurements of the streams. The increase which is found in the rivers is attributed to the inflow from springs fed and supplied by the water

¹ Water-Supply and Irrigation Papers No. 7, 1897, by Samuel Fortier, p. 13.

See, also, for subject of ground

waters, article by Bailey Willis of the U. S. Geological Survey, Vol. 2, pp. 689, 690, Report National Conservation Commission, 1909.

which has been applied in irrigation upon higher lands. As has been seen, in irrigation, more water is applied than the crop actually uses. A certain amount of the water passes down into the ground and disappears. This varies in amount in different localities and depends upon various conditions. Concurrent observations show that this seepage water usually passes directly downwards, with little or no lateral movement except capillary imbibition, until reaching an impervious stratum, when, filling the interstices, it gradually rises in the subsoil, and passes laterally with a slow movement due to the slope of the water surface which is thus formed. When the passage takes place through the interstices of the soil the movement is very slow. It is faster as the material is coarser. Where there are perceptible channels, the movement may be relatively rapid.²

How to lessen unnecessary seepage has been the serious study of those interested in the problem for many years. And in some of the older irrigated sections the question of drainage of the lower lands, affected by the seepage of water applied for the irrigation of lands above, has become as important a question as is the application of the water for irrigation.³

§ 25. Seepage water—Effects of.—One of the first effects of seepage noted in irrigation where the soil is pervious, is the filling of the subsoil with water. Evidence of this is found in the gradual rising of the water in the wells which may have been sunk in the region affected. Throughout any country where irrigation is practiced, the evidence is ample, for as the application has been made within a single generation, the changes which have ensued from the application of water are within the memory of many living observers. Take, for example, in many places where it was originally forty to fifty feet to the water in the wells of the region, water now stands from ten to twenty feet from the surface, the subsoil of the region having been filled to that point. There is

² See Water-Supply and Irrigation Papers No. 7, p. 11; Bulletin No. 33, Agricultural Experiment Station of Colorado.

³ For the drainage laws of the various States, see Part 14; The Reclamation of Seeped and Alkali Lands,

by C. F. Brown and R. A. Hart, 1910, Bulletin No. 111, Utah Agricultural College Experiment Station; Reclamation of Alkali Lands in Egypt, by Thos. H. Means, 1903, Bulletin No. 21, U. S. Dept. of Agriculture.

sometimes a lowering during certain seasons of the year, due to the suspension of irrigation on the land above, and also due to the lateral passage of the water. If the irrigation on the land above is continued for a long period, in many places, the lateral passage of the water has had the effect of filling in the ground higher and higher until the water appears on the surface, thus rendering it unfit for cultivation and capable of growing only tules, sedges, cat-tails, and other water loving plants. Also sometimes upon the evaporation of the water, a deposit of alkali is left, thus rendering what was formerly called the best agricultural lands entirely unfit for cultivation without drainage. These effects usually appear near the canal at first, and year by year are found farther and farther away from the canal, or from the irrigated locality, as the case may be. In course of time the waters which are thus percolating through the subsoil reach a depression, or a stream, and increase the waters passing therein, and in turn may be, and often times are, diverted again for the irrigation of lands lower down.

The effects of seepage as far as this work is concerned may be therefore summed up in two classes: Beneficial and injurious; beneficial, by increasing the available water supply of a section of the country; injurious, by rendering land, that formerly was good and in a state of cultivation, worthless by reason of water-logging or the alkalies that are deposited upon the surface. Of course these injurious effects upon lands that underlie irrigation canals and irrigated lands have given rise to a great deal of litigation in the courts for damages for injuries to land from "seepage," which include both water-logging,¹ and alkali, which subjects will be discussed in their proper places in this volume.²

§ 26. Evaporation—Definition and description.—Evaporation, as the term is known in irrigation parlance, is the conversion of the water or moisture in the soil, or from water surfaces into vapor, by the agency of natural heat. The large loss by the annual evaporation from wet ground surfaces of an arid region is of a far greater economic importance than is the question of the evapo-

¹ See post Secs. 1206, 1207.

See, also, Damages from Seepage;

² See Underground Waters, Chaps. Injunctions against Seepage. 59-62, Secs. 1148-1211.

ration which takes place from water surfaces, for the reason that, in a greater measure, it can be controlled by man. Such a conservation of the available water supply of any district results in having a balance, which can be utilized in the reclamation of other lands and in increasing the production of the lands now cultivated. The subject of evaporation will be discussed from another phase of the question when we get to the chapter upon the economical use of water and the suppression of waste.¹

But from the economic standpoint, the loss of an excessive amount of water by evaporation injuriously affects both the farmer who has an available supply of water for irrigation, and the one who cultivates his land dry, at the same time needing water. All other taxes paid by the farmer are small to the one levied by the atmosphere in robbing the soil of its much needed moisture. The magnitude of this loss borne by irrigators is enormous. It has been estimated that between seed time and harvest of each year there is sufficient water spread over the lands in the arid West to cover all of New England a foot deep. In some sections of the country this water is still cheap, but in others it is very expensive, more particularly in sections where the population is comparatively dense. The annual cost to the farmers in the maintenance of the works for applying so much water probably exceeds \$25,000,000, not taking into consideration the original cost of the rights. It is also estimated that at least 40 per cent of this water which costs so large a sum is lost each year by evaporation from the surface of the fields where it is applied. The loss to any farmer, in failing to get a portion of this water, is in diminishing yields. He is dependent largely upon the natural rainfall, which in this portion of the country is exceedingly slight during the cropping season; and, as a rule, his crops are good or poor in proportion to the amount of water retained in the soil and conserved from previous precipitation during the preceding winter or spring. Every acre inch of water which is retained and prevented by any means from passing into the atmosphere will assist in producing

¹ See Chap. 49, Secs. 874-916.

See subject of evaporation in article by Bailey Willis of the U. S. Geological Survey, Vol. 2, pp. 690, 691, Report Nat. Conservation Commission, 1909;

Evaporation Losses in Irrigation and Water Requirements of Crops, by Samuel Fortier, 1907, Bulletin No. 177, Office Experiment Stations, U. S. Dept. of Agriculture.

largely augmented crops upon a specific tract of land, besides greatly adding to the acreage which may be cultivated with the available supply of water. At best there is only water enough to irrigate a part of the fertile, arable land of the arid West; and, therefore, for every acre that is irrigated there are many acres which must of necessity be farmed dry, if they are farmed at all. The saving of water by the means of preventing an excessive evaporation has been given considerable study in this and other countries, some of the methods of which will be discussed in the following section.²

§ 27. **Evaporation—How prevented.**—How best to conserve the soil moisture over so vast an area, comprising both the dry and irrigated farms of the arid West, is a question which deserves the thoughtful consideration of every Western farmer; and in time, as the population of that region increases, will become a question of great National importance. For a number of years investigations have been carried on by the Office of Experiment Stations of the United States Department of Agriculture for the purposes of determining the extent of the loss by evaporation of moisture from the soils, and the best methods of preventing a portion of such loss. The experiments reported show that the conditions having the greatest influence on evaporation from soils are the quantity of water in the top soil, the temperature of the soil and water, and the wind movement. All of these can be controlled to a large extent by the irrigator by his methods of applying water and by subsequent cultivation of the soil. The application of the water in such a way as not to wet the top soil decreases the quantity of water in the top layer, and at the same time places the moisture in the soil beyond the influence of wind movements, and, to a considerable extent, beyond the influence of high temperatures of unusually hot days. The daily variations in temperature almost disappear at a depth of one foot, the decrease in temperature being very rapid on hot days. The amount of water evaporated from the soil depends largely upon the wetness of the soil, but the proportionate saving with reductions in temperature is probably as great as from water surfaces. From experiments made by the United States Department of Agriculture for a num-

² See Sec. 27.

ber of years, the following methods of applying the water have been found to conserve portions of the same: First, by applying the water at night, when the soil is cool and when there is an absence of the sun's rays, thus permitting the water to sink before there is a great opportunity for evaporation;¹ second, by applying the water at a sufficient depth to keep it from coming in contact with the hot surface layer of the soil, which can be accomplished by applying the water in deep furrows or by sub-irrigation;² third, by cultivation of the top soil. The frequent cultivation maintains a mulch of loose soil at the surface, which prevents the excessive heat of summer from reaching the moist soil, as well as destroying capillarity.³

When we come to the subjects of "wasting water," and "duty of water," the subject of evaporation will be discussed from the legal standpoint of preventing waste.⁴

¹ This method, although not always practicable, where it can be used permits the water to soak into and thoroughly saturate the ground before the heat of the day, when the evaporation is the greatest.

² For sub-irrigation, see Sec. 36.

See, also, *Primer of Irrigation*, Anderson, 1905, Chap. 15, p. 173; U. S. Department of Agriculture, *Experiment Stations Bulletin No. 177*, by Samuel Fortier.

One of the important features of the work of the Bureau of Soils, a bureau in the Department of Agriculture, during the past few years is the investigation of the movement of water in the soil. It has been heretofore supposed that the root of a plant is fixed in the soil and that the water, with the food material which it contains, moves up to the root in a constant supply through capillary action. It has been found, however, in measuring the rate of movement of water in a soil moderately dry or in a fair condition as regards the needs of plants that the movement is so slow as to be negligible. From a little experiment this is easily ascer-

tained. Take some soil from the field with what is called an optimum of moisture, or the best amount for plant growth, put it in a tumbler, filling the tumbler about half full, and put some dry soil on the surface. The difference can be easily seen, as the moist soil will be darker than the dry. Then if the tumbler is covered to prevent evaporation the dry soil can be left in contact with the moist soil and there will be no appreciable interchange of moisture between the moist and the dry layers. The moist earth will hold on to the water so tenaciously that the dry earth will not pull it away. So by cultivation the top layer of the soil becomes loose and the moisture is easily evaporated from it, but at the same time the dry top soil thus produced, served as a protection to the moist soil below as the capillary attraction is destroyed. See *Farmers' Bulletin No. 257*, U. S. Department of Agriculture.

³ See, also, Sec. 32.

⁴ For the economical use of water and the suppression of waste, see Chap. 43, Secs. 874-916.

§ 28. **Transpiration—Nature and description of.**—In an arid country agricultural products are almost entirely dependent upon the water supply. As a rule, the soil is fertile, containing in abundance the elements necessary for the development of plants; but if the water supply be either deficient or in excess, or applied at the wrong time, a partial or no growth will result. Vegetation requires water: First, to enable it to feed. Unless the soil is sufficiently moist the fine roots can not extract those chemicals which are necessary for the growth of the plant. Second, to furnish the sap and the water in the fruit or grain, whatever it may be. Third, to evaporate, or, rather to transpire. The amount of water required for the two first is very small as compared with what the plant evaporates. A plant, especially in hot weather and a dry atmosphere, throws a vast amount of water from its pores; it can not dispense with water, and unless fully supplied with it at the right time it will fail in its object. But by a proper irrigation method the proper amount of moisture is maintained in the soil, the plant is kept healthy, and in a vigorous condition, and the normal amount of water passes through its tissues by transpiration, bearing the necessary mineral food furnished by the soil. The sage brush and native grasses indigenous to the uncultivated region of the Rocky Mountains require but little moisture to maintain their slow growth. In certain sections of the arid region of this country the annual rainfall does not exceed from ten to fifteen inches per annum. Very little snow remains for any length of time on the ground; the evaporation in summer is excessive on all moist ground and water surfaces; and yet the sage brush flourishes, growing from a height of from three to ten feet. If we deduct from the total yearly precipitation the probable amount of moisture evaporated from the surface of the ground, very little will remain for the use of plants. It is possible that the total quantity of water absorbed by the roots of the plants that grow on the wild lands of the arid region and retained in the plants or transpired by their foliage does not exceed one-tenth of the annual precipitation. The magnitude of this transpiration of water through the foliage of plants, not native to the arid region, has been estimated by various scientists, through long series of experiments. And it is shown, for example, that 330 tons of water will be absorbed by the roots of clover, drawn up through the

stems, and transpired from the breathing pores of the leaves, for each ton of clover harvested. If the yield be estimated at three tons per acre, the quantity of water per acre is 990 tons, or a volume sufficient to cover the surface to a depth of nearly nine inches. The transpiration of many other forage and grain plants has also been estimated with similar results.¹

No method has been discovered by science, whereby transpiration from plants may be lessened at a saving of water, without injuring the plants. Only Nature is able to regulate her requirements in this respect.

§ 29. Supplemental irrigation—Definition and benefits.—The irrigation of lands in a humid region, where theretofore it had been supposed there was a sufficient rainfall, or the irrigation of lands in a semi-arid or sub-humid region, where there is a more scanty rainfall but sufficient in some seasons to bring crops to maturity, is termed "supplemental irrigation," inasmuch as it supplements the rainfall or makes good its deficiency and the uneven distribution during the periods of the crop growing season.

Formerly when the subject of irrigation was broached to an Eastern man, he immediately thought of an arid region, or one in which the ordinary rainfall during the summer months is insufficient to raise a crop to maturity or to raise one sufficiently profitable. In an arid region irrigation is practiced all the time, from the planting of the seed to the maturity of the crop, and even afterward it is necessary to again irrigate for the purpose of fitting the soil for the planting of the next crop. As a general thing the rainfall is totally disregarded, for the reason that it is not to be depended upon during the summer months. Irrigation there

¹ See Water-Supply and Irrigation Papers No. 7, p. 24; F. H. King, Agricultural Experiment Station, University of Wisconsin, 9th Annual Report, 1892, p. 94; Dept. of Agriculture, Experiment Station Record, Vol. 4, p. 532.

See, also, Primer of Irrigation, Anderson, 1905, Chap. 17, p. 194; Factors Influencing Evaporation and Transpiration, by John A. Widsoe,

Bulletin No. 105, Utah Agricultural College Experiment Station.

As to the relation of transpiration from forests to stream, see the chapter of Forests as Related to Stream Flow, Chap. 2, Secs. 40-62; The Relation of Forests to Stream Flow, by James W. Toumey, collaborator, Bureau of Forestry Yearbook, 1903, U. S. Dept. of Agriculture; Economics of Forestry, pp. 121, 437, 438, Fernow.

is an absolute necessity; and, therefore, all preparations are made for the same by the construction of the necessary works and keeping them in repair in order to utilize the water. But, during the more recent years, irrigation has been looked upon with more favor in portions of the country other than within the arid region. This is especially true in some portions of the South, and in some portions of the Middle West.

Even in the regions where the rainfall is usually ample for the growth and ripening of the fruit or crops the art of irrigation is becoming each year more and more a valuable adjunct to the natural rainfall. The satisfaction of knowing that the labor of a season will not be rendered void because of a week of drought coming just at the time when the plants need the moisture most, is one that can not be too much appreciated. The normal condition of the average farmer who depends upon the fall of rain is one of anxiety. He must wait for rains in order to plow, to sow, to cultivate. His work is often delayed because they do not come. The farmer who irrigates has the water under control. He turns on the amount needed, and at the time needed, and fits his land readily for any of these operations. He is sure of his supply of water, regardless of the condition of the weather. Should the rainfall be sufficient to supply the necessary moisture he needs only to suspend his irrigating operations for the time being.¹ Supplemental irrigation, though quite recent in the United States, and even now looked upon with disfavor in some portions of the Eastern part of the country, has been practiced in Europe and Asia for centuries, in those portions where the average rainfall is sufficient to raise crops without irrigation, as in our humid regions. In Germany, France, Italy, and even in the British Isles, it has been practiced with profit and success. But where it is of the most value, outside of a strictly arid region, is in the semi-arid, or as sometimes called, the sub-humid regions. In these regions, the rainfall is very fickle and uncertain both as to time and quantity. Some seasons there may be plenty of rainfall and at the right season of the year, so that large crops are grown and matured. Then will come a season of "dry spells," and then

¹ See the chapter on Supplemental Irrigation in the Primer of Irrigation, Anderson, 1905, Chap. 16, p. 187;

Irrigation in the North Atlantic States, by A. G. Bowie, 1906, Bulletin No. 167, U. S. Dept. of Agriculture.

another and another, so that the crops are absolutely ruined, or a very small crop comparatively is matured. Or there may have been a sufficient annual precipitation to raise crops, but it may have all come in the winter, or early in the spring when it was not needed; and there being no system of storage of this precipitation, it of course all runs off; and when the summer comes and the rain is needed the skies are as of brass and the earth like a burning furnace.

Supplemental irrigation has also been recognized in the Eastern and Middle States of this country, in the New England States, Illinois, Minnesota, Wisconsin, South Carolina, Louisiana, Alabama, and Georgia. While in that tier of States the western portion of which at least is semi-arid, composed of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas, the value of irrigation is known, as supplemental to the rainfall, and large irrigation plants are established, and are in operation. To state the proposition of supplemental irrigation succinctly, it removes the element of chance in all farming that depends solely upon water precipitated from the clouds upon the crops during the summer season.²

There is one fact which may be mentioned as the reason why supplemental irrigation is not more practiced in this country, and that is the general unprepared condition of the farmers, when the time comes that they need the water. In many sections where it could be used to advantage and profit, no works are constructed to utilize the water. When it rains, they do not need such works, and when they need the water they have not got the works to divert and conduct the water to the fields where it might be used.

§ 30. Irrigation and its many methods.—The methods of the practical workings of irrigation are today many and various. As the years have gone by and we have come to the early part of the twentieth century, by careful research and enlarged observation fully considered, and based upon the experience of ages in different countries, the practical workings of irrigation in some parts of the world have been so highly improved as to have become almost an exact science; or, at any rate, they have acquired a

² This subject will be more thoroughly discussed under the subject, History of Irrigation, Secs. 63-87.

distinct scientific character. However, their particular features greatly vary; indeed they are so unlike in different countries, and in different climates of the same country, as hardly to permit us to view them in the same light. Looking toward the far East, on the banks of the Tigris and Euphrates, we find the patient, plodding oxen laboriously raising the water from the streams, in buckets made of bullock skins, called lifting water by "bag, or mot." Throughout India, Asia Minor, and Egypt, we also find the "Persian wheel" driven by bullocks for the same purpose. In many localities in India and Egypt, we even find more primitive methods such as the "shaduf," or "shadoof," the "Archimedian screw," the "natali," the "double zigzag balance," the "doon, or tilting trough," the "swinging basket, or latha," the "paecottah," resembling the farmer's well sweep, and many other crude devices, all worked by the hand of man.¹ The machinery used in irrigation operations, in many parts of the world, is still of the crudest possible character; yet, with this aid, the water is raised to the surface and is poured into small trenches, which readily conduct it to the thirsty patches of soil under cultivation. And, furthermore, it is from such primitive examples as these that great lessons have been learned, in the practical operations and the results of cultivating the land by means of irrigation. Over in India,² Egypt,³ Italy,⁴ and a number of other countries of the old world, we find immense canals, aqueducts, and reservoirs, constructed by the respective Governments at enormous expense, and with the highest possible degree of human skill, always looking toward the permanency of such structures. Here whole provinces have been reclaimed from their natural wild state, and converted into the most fruitful regions of the earth.⁵ In our own country, thousands of miles of main canals and laterals and great reservoirs are already constructed, and many more under the process of construction. This has been and is being done both by

¹ See Pumping Water for Irrigation, by Herbert M. Wilson, 1896, Water-Supply Paper No. 1, U. S. Geological Survey; Décret et Règlement concernant les Machines Élévatoires, Avril, 1881, Ministère des Travaux Publics, le Caire, Imprimerie Nationale, 1907.

² For Modern Irrigation in India, see Secs. 103-118.

³ For Modern Irrigation in Egypt, see Secs. 88-102.

⁴ For Modern Irrigation in Italy, see Secs. 144-159.

⁵ For Modern Irrigation in Various Countries, see Secs. 160-176.

private enterprise and by the National Government, under the provisions of the Reclamation Act, and in some instances by States.⁶ The United States has alone expended \$51,000,000 on Federal irrigation systems, and this amount is far exceeded by private enterprise.⁷ In many parts of this country, especially where the land is practically level, and the water is found in channels somewhat below the adjoining land, many modern pumping plants have been installed, operated by steam, wind, gasoline, or electricity, whereby the water is raised to the level of the land and conducted by ditches and canals to the place of use.⁸ Owing to the recent scientific investigations, the movements of subterranean or underground waters have become known and defined; and, therefore, these waters are beginning to be utilized by means of artesian wells,⁹ pumping plants, or by concrete dams constructed below the surface so as to obstruct the water and force it to the surface.¹⁰

And, although great ingenuity and skill, and great diversity in the operation of these various systems appear, we do not hesitate to pronounce them all justly included under the one great art of irrigation. The shepherd who properly directs the course of a mountain streamlet in order to prevent stagnation and waste, and, of course, to promote the health of himself and of his flocks, and at the same time directs the waters in such a manner as to fertilize barren spots of soil and thus furnish additional supplies of food, really belongs to the same class of artisans as those who, by most elaborate surveys, skillful engineering, and enormous

⁶ For this Act, see Chap. 65.

⁷ See Water-Supply Paper No. 276, by W. B. Freeman and R. H. Bolster, 1911, U. S. Geol. Survey.

See, also, the Annual Reports of the Reclamation Service, up to and including that of 1912.

See, also, the Biennial Reports of the State Engineers of the respective States of the Arid West up to and including those of 1911.

See, also, the subject of irrigation as discussed by F. H. Newell, Director of U. S. Reclamation Service, Vol. 2, pp. 59-66, Report of National

Conservation Commission, 1909, and the same in Water-Supply Paper No. 234, U. S. Geol. Survey.

See, also, the same subject discussed by Samuel Fortier, Chief Irrigation Investigations, U. S. Dept. of Agriculture, Vol. 2, Rept. National Conservation Commission, pp. 67-73.

⁸ For Pumping Water for Irrigation, see Secs. 1201, 1202.

⁹ For Artesian Wells, see Secs. 1168-1170.

¹⁰ For Subterranean Waters, see Secs. 1148-1211.

capital and labor expended, are able to direct to the most useful ends the vast inundations of tropical rivers. The particular features in the operation of irrigation are different, but the result is the same, the cultivation of land by the best method, for the production of the food for the world.

§ 31. Irrigation methods—How water obtained from natural sources.—The first step toward the irrigation of lands is to acquire the right to the use of water from natural source of supply. The main portion of this work discusses how such rights are acquired, maintained, and protected, and will be thoroughly discussed hereinafter. The second step in the procedure is to construct the necessary works to utilize the water covered by such rights. There are numerous methods whereby the water is taken from the natural sources of supply and finally conducted to the place where it is to be applied to the soil for the irrigation of the same. The method of taking the water from the natural source of supply is immaterial as far as its final application to the soil for the purpose of irrigation is concerned. The most common method of obtaining the water is the damming of natural streams in such a manner as to divert the water therefrom into canals, ditches, or flumes, through which the water is conducted to the place of application. The outlets of lakes or ponds are sometimes dammed, the waters of the same thus raised so that they may be tapped by the canals and ditches.¹ Or, in certain localities the water is obtained by the sinking of artesian wells of a depth sufficient to strike an underground reservoir, from which by its own pressure from above it is forced to the surface of the ground and from thence conducted to the place of use in the usual manner.² Also by the

¹ For canal construction, see *Irrigation Engineering*, by Herbert M. Wilson; *Irrigation in the United States*, by F. H. Newell, 1906; *Irrigation and Drainage*, by F. H. King; *Irrigation Farming*, by Lucius M. Wilcox, 1910, Chap. 6, pp. 57-83; see, also, *Pipes for Irrigation Purposes*, Chap. 8, pp. 109-122; also, *Flumes and Their Structure*, Chap. 9, pp. 123-139, same Work.

² For artesian waters and wells, see *Subterranean Waters*, Secs. 1166-1184.

See, also, *Contributions to Hydrology of Eastern United States*, Water-Supply Papers Nos. 102, 110, and 145, and *Underground-Water Papers*, Water-Supply Paper No. 160, by Myron L. Fuller.

See, also, *Underground-Water Papers*, Water-Supply Paper No. 258, 1911, by M. L. Fuller, F. G. Clapp,

damming of the streams, especially where the fall is slight, the bottom lands may be flooded or inundated, as is the case of the rice fields of the Southern States, China, and Japan. Water wheels and current motors are sometimes used, where, by the force of the current of the stream itself, a small portion of the water is lifted to an elevation, where it can be run into the ditches.³

As much of the flow in the natural streams in this country during the summer time when the water is needed the most for irrigation is already appropriated, the construction of reservoirs for the appropriation and storage of the surplus or flood waters is becoming more common each year. By this means the water which would naturally run to waste during the winter and spring seasons is utilized, without interfering with the rights of those who have appropriated the natural flow of the streams during the cropping season. The water thus stored is let down by the means of ditches and canals, and sometimes through the natural stream itself, to the place where it is applied for use.⁴ Nearly all of the Western States have special statutes upon the subject of reservoirs and reservoir rights.⁵ Pumping plants of various kinds, propelled by steam, gasoline, electricity, or wind, are frequently resorted to, whereby at times great quantities of water are pumped from a stream, lake, or wells, as the case may be, to such an elevation as will permit the water to run by gravity to the place or places of use. In all parts of the arid and semi-arid regions are to be found these various sorts of pumps utilized for this purpose. The United States Government has taken the pains to investigate various kinds and makes of pumps, the merits of which will be found in the bulletins issued from time to time.⁶

G. C. Matson, Samuel Sanford, and H. C. Wolff; *Underground Waters*, by W. C. Mendenhall, Water Resource Branch U. S. Geological Survey, as part of the report in Vol. 2, pp. 86-94, of the National Conservation Commission, 1909; same in *Water-Supply Paper No. 234*.

³ For the right to use the current for the purpose of lifting water, as against other appropriators interfering therewith, see Sec. 724.

⁴ See for reservoirs and ponds, *Irrigation Farming*, by Lucius M. Wilcox, 1910, Chap. 7, pp. 84-108.

See, also, for Reservoir and Reservoir Rights, Chap. 46, Secs. 837-846.

⁵ For the statutes upon reservoir and reservoir rights, see Part 14.

⁶ See *Pumping Water for Irrigation*, by Herbert M. Wilson, 1896, *Water-Supply Paper No. 1*, U. S. Geol. Survey; *Irrigation Practice on the Great Plains*, by E. B. Cowgill, 1897, *Water-Supply Paper No. 5*, U. S. Geol.

§ 32. **Irrigation methods**—The application of the water to the soil.—After the water has been conducted to the fields or places of use, it must be applied to the soil in an economical manner consistent with the best crop production, and the rights of others who are also entitled to the use of water from the same source of supply.¹ There are a number of methods of the application of

Survey; Windmills for Irrigation, by E. C. Murphy, 1897, Water-Supply Paper No. 8, U. S. Geol. Survey; Underground Waters for Farm Use, by Myron L. Fuller, Water-Supply Paper No. 255, U. S. Geol. Survey; Cost of Pumping from Wells for the Irrigation of Rice in Louisiana and Arkansas, by W. B. Gregory, 1908, Bulletin No. 201, U. S. Dept. of Agriculture; Mechanical Tests of Pumping Plants in California, by J. N. Le Conte and C. E. Tait, 1907, Bulletin No. 181, U. S. Dept. of Agriculture; Tests of Internal-Combustion Engines on Alcohol Fuel, by C. E. Lucke, and S. M. Woodward, 1907, Bulletin No. 191, U. S. Dept. of Agriculture; Mechanical Tests of Pumps and Pumping Plants, by W. B. Gregory, 1907, Bulletin No. 183, U. S. Dept. of Agriculture.

See, also, for pumps and irrigation machinery, *The Primer of Irrigation*, Anderson, 1905, Chap. 19, pp. 209-218.

Also, see the most excellent chapter on Windmills and Pumps, in *Irrigation Farming*, by Lucius M. Wilcox, 1910, Chap. 17, pp. 352-393.

¹ For the economical use of water and the suppression of waste, see Chap. 49, Secs. 874-916; *Primer of Irrigation*, Anderson, 1905, pp. 194-208; *Irrigating the Farm*, Wilcox; *Irrigation Farming*, Wilcox, 1910, Chap. 11, pp. 166-205; *Irrigation for Farm and Garden*, Stewart; *Practical Information for Beginners in Irrigation*, by Samuel Fortier, 1906, Farm-

ers' Bulletin No. 263, U. S. Dept. of Agriculture; *Preparing Land for Irrigation and Methods of Applying the Water*, prepared by agents of irrigation investigation, under the direction of A. C. True, Director, Bulletin No. 145, Office of Experiment Stations, U. S. Dept. of Agriculture; *Distribution of Water in the Soil in Furrow Irrigation*, by R. H. Loughridge, under the direction of Samuel Fortier, Chief of Irrigation Investigations, Bulletin No. 203, Office Exper. Stations, U. S. Dept. of Agriculture.

See, also, the many other bulletins issued for distribution by the United States Government, catalogues of which may be had from the Department of Agriculture, the Interior Department, or from the Superintendent of Public Documents, Washington, D. C.

For the measurement of water, see Secs. 888-900.

For the duty of water, see Secs. 902-908.

See, also, for the duty and measurement of water, *Irrigation Farming*, by Lucius M. Wilcox, 1910, pp. 140-165.

For the relation of soils to irrigation, see *Irrigation Farming*, by Wilcox, 1910, Chap. 3, pp. 22-35; *Primer of Irrigation*, Anderson, 1903, Chap. 5, pp. 54-66.

Also, see the many bulletins issued by the Bureau of Soils of the U. S. Dept. of Agriculture, upon the subject of soils.

water to the soil. These usually vary according to the varying conditions of the soil, climate, etc., and the habits and customs of the irrigators of any particular locality. And, in general, it may be said that, in many sections of the country many irrigators, where not restrained by law and State supervision of the distribution,² in seeking to hold the right to the use of a certain quantity of water, apply too much water to their lands; and, thereby, they not only injure themselves, but also their neighbors, who are being deprived of its use. Even in this present time, there are too many farmers who attempt to cultivate their lands merely by the application of water, when a little greater exertion upon their part in plowing a little deeper, or in following a cultivator more assiduously, would not only benefit their lands, but would probably not injure themselves. They flood their lands with water, and when the top soil bakes under the rays of the sun, they apply more water to soften it up; this process being kept up indefinitely; when, if there had been more cultivation, and less water applied, a greater and better crop yield would have been had, and, at the same time, the water would not have been wasted. It should be remembered that a frequent cultivation maintains a mulch of loose soil at the surface, which prevents the excessive heat of summer from reaching the moist soil, as well as destroying capillarity.

It is not within the province of this work to discuss to any great extent the practical side of irrigation, and we shall not do so except in so far as this side relates to legal principles involved in the subject. But, as the methods of the application of the water to the soil for irrigation involves also the questions of wasting of water and "duty of water," it is necessary to discuss in a most general manner the various methods that irrigators have of applying the water to the land, after it has once been brought to the place of use.

As the Western portion of this country has become more and more settled up, by the great influx of settlers from other portions of this and foreign countries, the demand for water for irrigation of lands has each year become greater and greater. In many sections of the country the available water supply has become entirely inadequate for the present demand, and all of the known

² For the Law of State Control and the State administration of waters, see Chap. 68.

sources of supply have become utilized to their fullest possible extent. Hence it must necessarily follow that, if agriculture is to be extended in these sections, the only method by which it can be extended, is by a more economical use of the available water supply, and the absolute suppression of all waste. Some of these methods, however, are as economical and tend to produce the greatest crop results to the irrigator, and also to promote the greatest good to the greatest numbers in that community where the water is so used. Other methods of application are wasteful in the extreme, and tend to an actual injury in crop results to the owner, and also to rob others, who might make use of the water on their lands had a more economical method been pursued. This, of course, is an injury to such individuals, to the whole community, to the State, and, in turn, to the Nation, and has become a serious question in economics. Fortunately, the most of the States have taken up this matter, and by legislation prohibit the wasting of water, and provide for its economical distribution by State officials. The courts, also, when this matter has been properly brought before them, have as a general thing, upheld these laws, as a part of the police laws of the State, and have taken steps, by their decisions, to suppress the wasting of water, and the application of water to the ground by wasteful methods.³

§ 33. Methods of irrigation—Classification.—Where water is poured into or upon the soil, gravity first draws it downward; the particles of earth seize upon what they require, and the surplus water continues to descend until it reaches an impervious stratum or a water table, or is carried off through the drainage of the system. Then the capillary action begins, and the moisture ascends, and it and the nutritive elements that it has gathered from the soil are seized upon by the roots of the plants and absorbed. The main question is ever: By what method or methods of the application of the water to the soil will the roots absorb the moisture and nutritive elements so as to produce the most healthy growth of the plants and its fruit?

There are a great many methods of applying water to land for

³ See, also, *The Adjudication of Actions; The Damages to Water Rights; The Protection of Rights. Rights by Injunction and by Other*

irrigation, but they may be classified into four main systems, which are as follows:

First. Flooding the land or check system. This is where the water is made to cover the land entirely at any desired depth, and, according to the nature of the crop, is either allowed to remain stagnant, or stationary, or to pass off with a slight current.

Second. Flowing, ditch, or furrow irrigation. This is where the water is run over the land through ditches or furrows in close proximity to the plants.

Third. Infiltration, seepage, or sub-irrigation. In this method the water is carried to the roots of the plants by means of deep, open ditches, or by subterranean waterways laid for that purpose.

Fourth. Aspersation, or sprinkling. This is where the water is applied in a shower, or as an imitation of rain. Watering with a common sprinkling pot, or rubber hose, will give an idea of this system.¹ These systems are divided into many subdivisions, which vary according to the nature of the soil, climate, source of water supply, customs of the country, and those brought from other countries, and last, but not least, according to the individual so using the water.²

We will briefly discuss these methods in the above order in the following sections.³

1 See Anderson's Primer on Irrigation, Chap. 13.

2 "The diversity in irrigation methods in use on Western farms is largely due to the early training and environment of the irrigators themselves. Among the 120,000 irrigators of Western America are to be found nearly all classes and nationalities. Each settler from another State or from a foreign country introduces on his farm some custom or practice common to his old environment. This is particularly noticeable in the conservative Chinese, who irrigate the truck gardens near the towns and cities in Chinese fashion. The same is true of the Italians, Spaniards, and

Mexicans, who imitate, for a time at least, the ways of their forefathers. It also applies, but to a less degree, to those who come from humid States. The farmer who lives until maturity in the Mississippi Valley and then moves West onto an irrigated farm does not as a general thing adopt new ways of farming until crop failures compel him to do so. Even then the old ways of doing things are mixed with the new."—Preparing Land for Irrigation and Methods of Applying Water, Bulletin No. 145, Office Experiment Station, U. S. Dept. of Agriculture.

3 See Secs. 34-37.

§ 34. **Methods of irrigation—Flooding land.**—Irrigation by flooding is simply submerging the tract of land, by covering it with a sheet of water more or less deep, and allowing it to remain upon it a certain time, to “soak” into the soil before drawing it off. On flat or level ground, preparations for submersion are simple and easy, and simply consist of the throwing up of ridges of earth or dikes around the edge of the tract to retain the water. After the ground has soaked for a time, the water is let out from the first tract, enclosed by the dikes, into another tract, and the process is continued until the whole field has been covered.¹ The flooding of land in checks or compartments is the same system and has been practiced from the earliest antiquity. It was introduced into this country by the Spaniards, Mexicans, and the Mexican Indians. It is also sometimes called basin irrigation. The size of the checks varies greatly in different portions of the country, and according to the nationality of the irrigators. The Mexicans construct from ten to fifty checks on a single acre, while in some sections, Americans, in order to conduct operations upon a large scale, have increased the size of the checks to from ten to thirty acres each.² This method has its advantages and disadvantages. It can not be used in a country where there is considerable slope to the land, without a great deal of labor in preparing the land, as the land in each check must be level, or the high places will receive no water, and the lower places receive too much. The method should be adopted or rejected according to physical conditions. Yet in the face of many difficulties whole communities cling to this method. It has been said that: “Such farmers are like cobblers who attempt to make all shoes on one last.”³ The most important disadvantages, as far as this discussion is concerned, is that this method requires more water than is required under any other system, and the beneficial results are no greater. In certain crops the method, because of the embankments thrown up to retain the water, to a certain extent prevents cultivation, so necessary to any such crop in all countries, and especially where

¹ Primer of Irrigation, Anderson, 1905, p. 158.

² Preparing Land for Irrigation and Methods of Applying Water, Bulletin No. 145, 1904, Office Experiment Sta-

tions, U. S. Dept. of Agriculture, pp. 28-35, 79-83.

³ Preparing Land for Irrigation and Methods of Applying Water, Bulletin No. 145, *supra*.

the land is cultivated with the aid of irrigation. Other crops which can not be cultivated, such as alfalfa, although it requires a great volume of water to operate successfully, receive great benefit from this method.

Professor Schwerz, in his treatise on practical agriculture, in summing up the advantages and disadvantages of the flooding or submersion system, concludes: "Finally, to inundate a large field rapidly throughout its entire extent is to consume an enormous amount of water." It requires much more water than is allowed under the "duty of water" under many of the United States Reclamation projects, or by the laws of many of the States fixing the duty. And its operation may be considered, in these times, when a most economical use of all of the water supply is required, in many instances, as a method of wasting water by adhering too closely to ancient customs and traditions.

§ 35. Methods of irrigation—The ditch or furrow method.—Probably the most common method of applying water to the soil after it has been brought to the place of use is by the ditch, trench, or furrow method.¹ This method is more especially adaptable to all conditions of the country and lands, where there is sufficient slope to permit the water to run freely. And it is more generally used in larger enterprises than are other methods, for the reasons that it takes less water to irrigate the same area, and the water is more easily handled. It is a distinct saving of water over the flooding method discussed in the last section.² It may be adapted to much more uneven land, and, when the kind of crop permits it, it permits of cultivation. It is better adapted to lands which have considerable slope, as where there is little fall the water be-

¹ See *Preparing Land for Irrigation and Methods of Applying Water*, 1904, Bulletin No. 145, Office Experiment Stations, U. S. Dept. of Agriculture; *Distribution of Water in the Soil in Furrow Irrigation*, 1908, by R. H. Loughridge, under the direction of Samuel Fortier, Chief of Irrigation Investigations, Bulletin No. 203, same; *Practical Information for Beginners in Irrigation*, 1906, by Samuel For-

tier, *Farmers' Bulletin No. 263*, U. S. Dept. of Agriculture.

See, also, the many bulletins issued by the Dept. of Agriculture, upon this and kindred subjects, and those issued by the State Agricultural Colleges and Experiment Stations, catalogues of which can be had for the asking.

See, also, *The Primer of Irrigation*, Anderson, pp. 157, 158.

² See Sec. 34.

comes stagnant on account of the ditches overflowing. But it may also be used for the raising of crops which can not be cultivated. And for this purpose, small dams often made of canvas are used in the small ditches and trenches running through the fields. This permits the water to overflow, and, in a measure, floods the fields; afterward, the dams are removed and the water permitted to drain off through the system of ditches prepared for that purpose, thus preventing stagnation. By the furrow method the loss of the water by seepage and evaporation is lessened, as the soil is moistened chiefly from capillarity from beneath the surface. The greater portion of the water thus applied is absorbed by the soil and the plants in such a manner that it produces the greatest results. A small head can be conveniently and advantageously used, by using fewer furrows at the same time; and a larger head may be used by permitting the water to flow through more furrows. The alkali is less liable to rise to the surface, and the land is not so subject to baking. It may be cultivated, new furrows being marked off by an implement for that purpose, so as to be ready for the next watering. And, above all, there being a less loss of water by this method, a greater area may be irrigated by the same volume, than there can be by the flooding method. This insures a greater duty of the water and a more economical use.

§ 36. Methods of irrigation—Infiltration or sub-irrigation.—

The third of the more common methods of applying the water to the soil is that of infiltration, seepage, or sub-irrigation. By this method the water is applied directly to the roots of the plants by the means of deep open ditches or trenches, or by subterranean pipes or conduits laid for that purpose.¹ It is better adapted to horticulture than to general agriculture. It is also used in truck gardening. It can not be operated in clayey, impervious soils, and only where the soil is sandy or gravelly.

This method possesses the advantage over surface irrigation only in the saving of water, and in this there is a decided advantage, especially where the water is very scarce, and none must be wasted. While sub-irrigation has been practiced in different parts of the country, especially in California, it has never proved entirely satisfactory. But experiments of the United States Depart-

¹ Primer of Irrigation, Anderson, 1905, p. 165.

ment of Agriculture tend to show that a large conservation of water might be made if sub-irrigation could be made practicable, and at a minimum expense. But the expense of this method is heavy. It costs a considerable sum of money to lay out a field and to run a pipe line underneath the ground for each row of trees and to have a faucet or opening at each tree. However, it is operated to a considerable profit in some localities for the cultivation of citrus fruits and in gardening, where every foot of ground is cultivated and every inch of water utilized. And, as the demand for water becomes yearly greater, there may come a time when this method will be more in vogue.

In this connection especially for the benefit of the so-called scientific dry farming, much study has been made of the question of the storage of water in the soil.²

§ 37. **Methods of irrigation—Asperson or sprinkling.**—The fourth and last independent method of applying the water is by asperson or sprinkling. This is merely applying the water to the plants and soil in the form of an artificial shower. It is only so applied in the smaller operations, such as market gardening or in the raising of berries. It is usually supplemented by other methods of irrigation, and the sprinkling method used only during certain seasons of the year to force the product, and when it would be injurious to use any of the other methods. At times pipes are strung along over the rows of plants pierced with small holes. These are then attached to a water system, where the water is under pressure, and the water is then forced through the holes out upon the plants. The method is valueless in general farm irrigation, and in horticulture, except in the case of the smaller fruits and berries.¹

§ 38. **The drainage of irrigated lands, or lands affected by irrigation.**—The drainage of irrigated lands, and lands which lie below where irrigation operations are being carried on, has become almost as great a question from an economic standpoint, in

² See The Storage of Winter Precipitation in Soils, by John A. Widtsoe, 1908, Bulletin No. 104, Extension Service, U. S. Department of Agriculture.
¹ See The Primer of Irrigation, Anderson, 1905, p. 170.

many localities, as is the application of the water to the lands for irrigation. In the early history of irrigation, the lands adjoining the streams were first taken up and upon these irrigation operations were first commenced. These lands lying close to the natural stream required but little artificial drainage. But as time has gone on, the lands higher up and farther back from the stream were taken up and also irrigated. After this, it was found that the first farms were becoming too wet, caused by the seepage from the irrigation above them. This process has been repeated; and, as still higher lands were irrigated, in many instances, the first farms upon the lower lands have become practically swamps. It therefore naturally follows that, in order to develop these sections of the country to their full capacity, and not to retard their progress where they have been once developed, the question of the drainage of these lands has become one of great economic importance. In fact, the two questions of irrigation and drainage must go hand in hand where this condition exists. There are a number of good works upon the practical side of the subject to which reference is made in our note.¹ In this, as in other questions relating to the subject of irrigation, the United States Government has taken advanced steps in investigating and suggesting the remedy for this evil. See the many reports by the Agricultural Department upon the subject of irrigation and drainage investigations, catalogues of which may be secured from the Secretary, or from the Superintendent of Public Documents. The most of these reports are also available.² The State Agricultural Colleges and U. S. Experiment Stations throughout the West have also investi-

¹ See *Irrigation and Drainage*, by F. H. King; *Practical Farm Drainage*, Elliott; *Drainage for Profit and Health*, Waring; *Farm Drainage*, French; *Land Drainage*, Miles; *Tile Drainage*, Chamberlain; *The Primer of Irrigation*, Anderson; *Irrigation Engineering*, Wilson; Articles upon the subject in *The Irrigation Age*. Any and all of the above works may be secured from *The Irrigation Age*, 30 North Dearborn Street, Chicago, Illinois.

² See *Drainage of Irrigated Lands*,

by Chas. F. Brown, *Farmers' Bulletin* No. 371.

See, also, *Drainage of Farm Lands*, by C. G. Elliott, *Farmers' Bulletin* No. 187; *The Drainage of Irrigated Lands in the San Joaquin Valley, California*, by Samuel Fortier and V. M. Cone, Office Experiment Stations, *Bulletin* No. 217; *Report of Irrigation and Drainage Investigations, 1904*, by Elwood Mead, *Separate Doc. No. 799*, same in *Annual Report of the Office Experiment Stations for 1904*; *Development of Methods of Draining Irri-*

gated the subject, especially with the object of remedying the evil in their particular States.³

This subject will also be discussed from a legal standpoint in this work.

§ 39. Legal rights of the irrigator and the owner of irrigation projects.—The last phase of the subject under discussion in this chapter, but by no means the least, is that relating to the legal rights of the irrigator, and the owner, projector of, or those who invest their money in all irrigation enterprises, or other projects dependent upon the use of water. Such persons should be thoroughly familiar with the laws upon the subject of the particular State where such operations are being, or are about to be, carried on. However, as a general proposition, it is not necessary to look further than the laws of that particular jurisdiction, as the control and regulation of the use of all waters flowing or lying within any State are left entirely to that State.¹

Therefore, if the operator claims the right to the use of the water by virtue of an appropriation of the same under the Arid Region Doctrine of appropriation, he must understand thoroughly just what his rights are under the laws of the State for the acquisition of his right, and as against other appropriators, either prior or subsequent to him. If he is operating in one of those States which still adheres to the doctrine of the common law, he must

gated Lands, by C. G. Elliott, Doc. No. 1394, same in Annual Report of the Office of Experiment Stations for 1910; Losses of Irrigation Water and Their Prevention, by R. P. Teele, Annual Report of the Office of Experiment Stations for the year ending June 30, 1907, pp. 369-386; Work of Drainage Investigations, 1909-1910, by R. D. Marsden, Annual Report of the Office of Experiment Stations for the year ending June 30, 1910, pp. 43-54; Land Drainage by Means of Pumps, by S. M. Woodward, Drainage Engineer, Drainage Investigations, 1911, Bulletin No. 243, Office of Ex-

periment Stations, U. S. Dept. of Agriculture.

³ These bulletins may usually be had upon application.

Especially see Seepage or Return Waters from Irrigation, by Professor L. G. Carpenter, 1896, Bulletin No. 33, Colorado State Agricultural College Experiment Station, Fort Collins, Colorado; The Reclamation of Seeped and Alkali Lands, by C. F. Brown and R. A. Hart, 1910, Bulletin No. 111, Utah State Agricultural Experiment Station, Logan, Utah.

¹ For the right of a State to control the waters within its boundaries, see Sec. 593; see, also, Chap. 86.

also understand his rights as against those who own land through or adjoining which the stream flows, and who claim the right to the waters by virtue of their riparian ownership in and to the same. Again, if under the latter law, the operator claims the right to the use of the waters by virtue of his riparian rights accruing from the circumstances of the situation of his land upon the stream, he must understand the laws of the State relative to his right to divert the water from the natural stream, his rights as against his neighbors who have similar riparian rights, and who, perhaps, may insist that the water in the stream be permitted to flow in its natural channel, undiminished in quantity and undeteriorated in quality. And, where both rules of law are in force, he must also understand his rights as against those who claim the waters by appropriation, either made prior or subsequent to the time when he or his grantors first settled upon the land.² All these questions should be understood as thoroughly as possible before the operator invests too great a sum in the enterprise. The best advice which can be given upon this subject is for the operator to consult the best legal talent obtainable, prior to the time of commencing his operations; if it is done afterward, it may be that even the best counsel may not be able to extricate him from his difficulties. In many localities may be found the remains of works which have been constructed, or partially constructed, with great expenditure of money and labor, and which have been abandoned, from the simple fact that the projector did not understand his legal rights before he commenced operations. A prudent man will first take into consideration the legal phases of the enterprise before he embarks too deeply in the undertaking. And, by the careful consideration of these questions after taking legal advice, he may thus avert disaster to the enterprise, financial ruin to himself and those who invest in the project, and reflection upon the art of irrigation itself.

² For riparian rights, see Chaps. 21-28, Secs. 450-551.

For irrigation as a riparian right, see Chap. 26, Secs. 498-525.

For the nature and extent of rights by appropriation, see Chap. 41, Secs. 757-774.

CHAPTER 2.

FORESTS AND THEIR RELATION TO STREAM FLOW.

- § 40. Scope of chapter.
- § 41. Our forest resources.
- § 42. Forest growth and methods of increase.
- § 43. The destruction of our forests.
- § 44. General physical effects of forests upon a country climate.
- § 45. Influence of forests upon temperature.
- § 46. Influence of forests upon humidity.
- § 47. Influence of forests upon rainfall.
- § 48. Influence of forests upon fallen precipitation.
- § 49. Influence of forests upon fallen precipitation—Evaporation.
- § 50. Influence of forests upon fallen precipitation—Transpiration.
- § 51. Influence of forests upon fallen precipitation—Surface run-off.
- § 52. Influence of forests upon fallen precipitation—Seepage run-off.
- § 53. Influence of forests upon fallen precipitation—Deep seepage run-off.
- § 54. Damages resulting from immediate surface run-off.
- § 55. Damages from immediate surface run-off—Floods.
- § 56. Damages from immediate surface run-off—Loss of water.
- § 57. Damages from immediate surface run-off—Erosion.
- § 58. The perpetuation of our forests.
- § 59. The perpetuation of our forests—What has been done by the United States.
- § 60. The perpetuation of our forests—What is being done by the States.
- § 61. The perpetuation of our forests—What has been done by municipalities.
- § 62. The perpetuation of our forests—What has been done by the individual.

§ 40. **Scope of chapter.**—It is not our intention in this present chapter to give an extended discussion upon the general subjects of forests or forestry.¹ But the subject of forests is so closely allied to that of irrigation in the Western portion of this country, that this work would not be complete without a discussion of forests and their relation to stream flow. And, therefore, to this extent we will discuss the subject.²

¹ That subject will be reserved for another work by the author, upon the subject of Forests, Forestry, and Forest Laws. This work is in a large measure written, and will be published shortly after the publication of the present work.

² For economic questions relating to irrigation and methods, see Chap. 1, Secs. 1-39.

§ 41. **Our forest resources.**—The United States ranks second among the nations of the world in the extent of its forests. Russia, including Siberia, has the largest forest area of any country, while Canada ranks third.¹ It is estimated that the original forests of the United States covered not less than 850,000,000 acres. All classes of our forests, good, bad, and indifferent, now cover but 550,000,000 acres, the difference of 300,000,000 acres having been destroyed by various means, mainly through the march of civilization.² Of the 550,000,000 acres remaining, there are but 225,000,000 acres which are called “producing forests”; and on this area the stand is so open that all the trees could be grown on 145,000,000 acres.³ Of the forested area of the country about one-fifth is owned by the Government and by States, and about four-fifths is owned by private parties.⁴ The area of such lands owned by the Federal Government is approximately 92,629,500 acres, of which 81 per cent is in National forests, 11 per cent in Indian reservations, and 5 per cent in unreserved public lands.⁵ The total area of State forested land is estimated at 9,460,622 acres.⁶ Of the four-fifths of such lands owned by private parties, it is estimated that in the whole United States the farmers own over 204,000,000 acres, of which 46 per cent contains merchantable timber, 43 per cent cord-wood timber, and 11 per cent brush land.⁷ The re-

¹ Foreign Sources of Timber Supply, by Raphael Zon of the U. S. Forest Service, Vol. 2, p. 280, Report of the National Conservation Commission, 1909; see, also, authorities cited on p. 369.

² For the destruction of forests, see Sec. 43.

³ Methods of Increasing Forest Productivity, by E. E. Carter, U. S. Forest Service, Vol. 2, p. 279, Report of the National Conservation Commission, 1909.

⁴ Article on Forests, by Overton W. Price, Secretary, Section of Forests, Vol. 1, p. 52, Report of the National Conservation Commission, 1909; same

in Cir. No. 171, Forest Service, U. S. Dept. of Agriculture.

⁵ Standing Timber in the Possession of the Federal Government, by G. M. Homans, U. S. Forest Service, Vol. 2, p. 192, same Report as last above.

For the total area of all lands reserved as National Forests, see Sec. 643.

⁶ Standing Timber Owned by States, by J. Girvin Peters, U. S. Forest Service, Vol. 2, p. 191, same Report as last above.

⁷ Standing Timber in Wood Lots, by Wesley Bradfield, U. S. Forest Service, Vol. 2, p. 181, same Report as last above.

maining of the forested area in the United States is in the hands of railways, lumbermen, timbermen, and speculators.⁸

§ 42. Forest growth and methods of increase.—The estimated total production by forest growth of the total forested area of the United States, including mature and devastated forests, is placed at 6,700,000,000 cubic feet. This is an average of about 28 cubic feet per acre for the estimated “producing forests,”¹ and about 12 cubic feet for the entire forest and woodland area of the United States, including all classes of forest lands.²

In carefully managed forests, such as are found in Germany and some of the other countries of Europe, the annual cut is equal to the growth or increase in wood material, and, therefore, for such a forest productiveness means both growth and the amount cut. And the technical term “producing forests,” as used by foresters, does not merely mean forests from which timber and wood may be obtained, but it means those forests, wherein the quantity cut in a given period is equaled by the growth of the wood material during the same period. The productivity of our forest area may be increased in many ways. The removal of the mature timber will give an opportunity for the younger trees already on the land to grow to maturity. These trees may then be cut, and the process thus continued indefinitely. The vacant spaces on lands now designated as forest may be planted to trees, and thereby the density increased without injury to the other portions. Fast growing species may also be either retained or planted. The quality of the timber and lumber produced may be increased by the retention of naturally well-shaped and large growing trees only. And it is estimated that, from all sources, the productivity of our present forest area may be increased from the annual average of 12 cubic feet to that of 80 cubic feet, and from the

⁸ See, also, *Original Forests*, by R. S. Kellogg, U. S. Forest Service, Vol. 2, p. 179, same report as last above.

¹ See Secs. 58-62.

² *Rate of Forest Growth*, by E. A. Ziegler, U. S. Forest Service, Vol. 2, p. 223, Report of the National Conservation Commission, 1909.

forests does not average more than twelve cubic feet per acre. This gives a total yearly growth of less than 7,000,000,000 cubic feet.”—*Forests*, by Overton W. Price, Secretary, Section of Forests, Vol. 1, p. 54, Report of the National Conservation Commission, 1909.

“The yearly growth of wood in our

total of 6,700,000,000 cubic feet to 25,850,000,000 cubic feet.³ But, as we shall see in the following section,⁴ in our forests as managed and operated at the present time, the actual cut for legitimate purposes far exceeds the present growth, not taking into consideration the losses from waste, including fires.⁵ "We are now cutting annually the growth of many past years."⁶ In a properly maintained "civilized forest" only the ripe timber is cut, and great care taken to preserve the young growth from injury.⁷ By this method a perpetual growth and supply of timber is maintained.

§ 43. The destruction of our forests.—The causes of the destruction of our forests are numerous and are principally as follows: We are taking from our forests annually for legitimate uses 23,000,000,000 cubic feet of wood, including waste in logging and manufacturing, as against 7,000,000,000 cubic feet grown upon

³ See Rate of Forest Growth, by E. A. Ziegler, U. S. Forest Service, Vol. 2, pp. 203-269, Report National Conservation Commission, 1909; Methods of Increasing Forest Productivity, by E. E. Carter, U. S. Forest Service, Vol. 2, pp. 270-279, same Report; Forest Products, by R. S. Kellogg, U. S. Forest Service, Vol. 2, pp. 196-202, same Report; Foreign Sources of Timber Supply, by Raphael Zon, U. S. Forest Service, Vol. 2, pp. 280-370, and authorities cited on pp. 369, 370, same Report; Cost of Forestry in Different Countries, by Professor H. S. Graves of Yale Forest School, Vol. 2, pp. 371-374, same Report; Extent to Which Foreign Methods of Forest Administration Are Suited to the Conditions in the United States, by S. T. Dana, U. S. Forest Service, Vol. 2, pp. 375-389, same Report; Forest Products of the United States, 1906, Bulletin No. 77, Forest Service, U. S. Dept. of Agriculture, Gifford Pinchot, Forester.

See, also, authorities cited under Sec. 43.

See, also, the annual reports of the

Superintendent of Forestry of the Dominion of Canada, issued by the Department of the Interior, Ottawa, giving full details as to the care and regulations of the forests in the Dominion, including the planting of new forests.

⁴ See Sec. 43.

⁵ For the destruction of forests by fires, see Sec. 43.

⁶ Methods of Increasing Forest Productivity, by E. E. Carter, *supra*, p. 270.

⁷ See the Indian Forest Act of British India, 1878; Imperial Gazetteer of India, Simla, 1903, Vol. 3, Chap. 2; Circular No. 22-F, dated Oct. 19, 1894, issued by the Dept. of Revenue and Agriculture of the Government of India.

See Review of Forest Administration in British India for the year 1903-4, with a quinquennial summary; also review for year 1905-6, both by S. Eardley-Wilmot, Inspector General to the Government of India, Calcutta, 1906, 1907.

the forested area. We are taking 40 cubic feet per acre for each 12 cubic feet per acre grown.¹ In addition to the annual cutting for legitimate uses, there has been destroyed by fire since 1870, each year, not less than \$50,000,000 worth of merchantable timber, not counting the young growth which is worth far more than the merchantable timber burned. Of the latter class alone, "not less than 20,000,000 acres of young growth are burned over annually."² And, probably, when the losses from the fires of the present year of 1912 are computed, it will be found to exceed the above figures. The principal cause of the destruction of young timber, next to that of fire, is that of overgrazing by horses and cattle, and especially sheep. Upon the National forests, however, this is now being limited by the Forest Service to a certain number of animals per

¹ Forests, by Overton W. Price, Secretary, Section of Forests, Vol. 1, pp. 55, 58, Report National Conservation Commission, 1909.

See, also, Conservative Logging, by Earl N. Clapp, Chief of Management, Forest Service, Vol. 2, pp. 512-546; Waste in Milling, by Louis Margolin, U. S. Forest Service, Vol. 2, pp. 547-567, same Report; Waste in Use of Timber, by McGarvey Cline, U. S. Forest Service, Vol. 2, pp. 568-580, same Report; Waste in Logging Southern Yellow Pine, by J. Girvin Peters, Forest Assistant, Yearbook Dept. of Agriculture, 1905, pp. 483-494; The Waning Hardwood Supply and the Appalachian Forests, by Wm. L. Hall, Assistant Forester, Cir. No. 116, Forest Service, same Dept.; Exports and Imports of Forest Products, by R. S. Kellogg, 1907, Cir. No. 110, Forest Service, same Dept.; The Lumber Cut of the United States in 1906, by Gifford Pinchot, 1907, in co-operation with the Dept. of Commerce and Labor, Bureau of Census, Cir. No. 122, Forest Service, same Dept.; The Conservation of Natural Resources, by Gifford Pinchot, 1908, Farmers' Bulletin No. 327,

5—Vol. I—Kin. on Irr.

U. S. Dept. of Agriculture; Cutting Timber on the National Forests and Providing for a Future Supply, by Raphael Zon, Chief, Office Silvics, Forest Service, and E. H. Clapp, Chief, Office of Forest Management, Yearbook of Dept. of Agriculture for 1907, pp. 277-288; Report of the Secretary of Agriculture on the Southern Appalachian and White Mountain Watersheds, by James Wilson, Secretary, 1907; The Drain Upon the Forests, by R. S. Kellogg, Chief, Office of Wood Utilization, Cir. No. 129, Forest Service, U. S. Dept. of Agriculture.

² Forest Fires, by Clyde Leavitt, U. S. Forest Service, Vol. 2, pp. 390-468, Report National Conservation Commission, in which it is also said: "The destruction of the young growth, though never included in the estimates of fire damage, is a principal item of loss"; Notes on Some Forest Problems, by Gifford Pinchot, Yearbook of Dept. of Agriculture for 1898, pp. 181-192; Forest Fires in the Adirondacks in 1903, by H. M. Sutter, Agent U. S. Bureau of Forestry, 1904, Cir. No. 26.

acre.³ Another cause of the destruction of our forests, and the only one that is not due directly to man, is by insects. "It has been determined that in this country certain species of insects are the direct or primary cause of the death of trees of all ages, and that from time to time they multiply to such an extent as to take the character of a destructive invasion, resulting in the death of a large proportion of the timber of certain species over many square miles."⁴ The different methods of working the forests for the products, exclusive of the timber itself, such as for turpentine, tar, and pitch, which are known as "naval stores,"⁵ and the cutting down of trees solely for their bark to be used in tanning operations, have been the cause of the destruction of great forest areas. These wasteful methods are, to a certain extent, going on at the present time, but in many localities a more economical method is being pursued, as it has been ascertained that these products could be secured by the more modern scientific methods without felling the trees.⁶

³ See A Primer of Forestry, Bulletin No. 24, Division of Forestry, U. S. Dept. of Agriculture.

See, also, Use Books issued each year by the Forest Service, of the same Department; Grazing and Floods, by Robert V. R. Reynolds, 1911, Forest Examiner, Bulletin No. 91, Forest Service, U. S. Dept. of Agriculture; Range Management, by J. S. Cotton, Assistant in Range Investigations, Yearbook of Dept. of Agriculture for 1906, pp. 225-238; Preliminary Report of the Inland Waterways Commission, 60th Congress, 1st Session, Document No. 325; Grazing on the Public Lands, Extracts from the Report of the Public Lands Commission, Senate Document No. 189, 58th Congress, 3d Session, Bulletin No. 62, Forest Service, U. S. Dept. of Agriculture.

⁴ Waste and Reduction of Timber Supplies Caused by Insects, and Methods of Prevention and Control, by A. D. Hopkins, in charge of forest insect

investigations, Bureau Entomology, U. S. Dept. of Agriculture, Vol. 2, pp. 469-497, Report National Conservation Commission, 1909, in which it is estimated that by the Southern pine beetle alone, in an area designated in the southeastern portion of the country, in over 75,000 square miles, a large percentage of the mature and small trees of the various species of pine and spruce were killed.

⁵ Conservative Turpentine, by Geo. B. Sudworth, U. S. Forest Service, Vol. 2, pp. 498-511, Report National Conservation Commission, 1909; The Analysis of Turpentine by Fractional Distillation with Steam, by William C. Geer, Expert, Cir. No. 152, Forest Service, U. S. Dept. of Agriculture.

⁶ Forest Products, by R. S. Kellogg, U. S. Forest Service, Vol. 2, p. 201, Report National Conservation Commission, 1909; Conservative Logging, by Earle N. Clapp, Chief of Management of Forest Service of U.

Another great cause of the destruction of the present forests in the United States is the annual clearing of forest lands for agricultural purposes. Other causes of destruction may be remedied or prevented to a certain degree, but this is a permanent destruction. "The greatest and most permanent factor in reducing the annual growth and future supply of timber in the United States has been the necessary clearing of forest producing lands for cultivation."⁷ There are a number of other minor causes which contribute more or less to the annual destruction of our forests, which are unnecessary to discuss. And, from all causes taken together, it may be conservatively stated that wood amounting to four times the annual growth is being destroyed each year. There are various methods by which this can be remedied, and these must be taken advantage of at an early day to the fullest possible extent, and thus prevent the annual exhausting of our capital of wood material. It is not the purpose of this work to discuss these subjects, but they will be discussed in a subsequent work already largely written by the author, which work will be published at an early date.⁸ In the meantime we will let this subject rest with the citation of some of the authorities upon the subject of rehabilitation of our forest area in our foot notes.⁹

S., Vol. 2, p. 517, same Report; Utilization of Wood Waste by Chemical and Other Means, by H. S. Bristol and L. F. Hawley, U. S. Forest Service, Vol. 2, p. 651, same Report.

⁷ Reduction of Timber Supply Through the Abandonment or Clearing of Forest Lands, by W. B. Greeley, U. S. Forest Service, Vol. 2, pp. 633-644, Report National Conservation Commission, 1909.

⁸ See Kinney on Forests, Forestry, and Forest Laws.

⁹ See the authorities cited in the previous notes in this chapter.

See, also, Taxation of Timber Lands, by Fred Rogers Fairchild, Ph. D., Yale University, Vol. 2, pp. 581-632, Report National Conservation Commission, 1909; Wood Preservation, by W. F. Sherfesees and H. F. Weiss,

U. S. Forest Service, Vol. 2, pp. 658-667, same Report; Forest Planting, by A. S. Peck, U. S. Forest Service, Vol. 2, pp. 668-686, same Report; Past and Present Prices of Forest Products, by H. S. Sackett, U. S. Forest Service, Vol. 2, pp. 748-758, same Report; Rate of Forest Growth, by E. A. Ziegler, U. S. Forest Service, Vol. 2, pp. 203-269, same Report; Methods of Increasing Forest Productivity, by E. Carter, U. S. Forest Service, Vol. 2, pp. 270-279, same Report; Economics of Forestry, Fernow, 1902; Aspects of the Earth, Shaler, 1890; The Earth as Modified by Human Action, Marsh, 1884; A Primer of Forestry, Parts 1 and 2, by Gifford Pinchot, Forester, Bulletin No. 24, Division of Forestry, U. S. Dept. of Agriculture; The Use of the National Forests, Forest Serv-

Many of the bulletins and articles cited in our notes were written by men of world wide renown, who have made a study of practical

ice of the U. S. Dept. of Agriculture; Forestry in the Public Schools, by Gifford Pinchot, 1907, Circular No. 130, Forest Service, U. S. Dept. of Agriculture; A Primer of Forestry, by Gifford Pinchot, 1903, Farmers' Bulletin No. 173, U. S. Dept. Agriculture; Arbor Day, by Gifford Pinchot, 1907, Circular No. 96, Forest Service, same Dept.; Practical Assistance to Tree Planters, by Gifford Pinchot, 1907, Circular No. 23, Forest Service, same Dept.; The Forest Service, by Gifford Pinchot, 1907, Circular No. 36, Forest Service, same Dept.; Forestry in the Public Schools, by Hugo A. Winkener, Forest Assistant, 1907, Circular No. 130, Forest Service, same Dept.; The Practice of Forestry by Private Owners, by Henry S. Graves, Superintendent of Working Plans of the Division of Forestry, Yearbook Dept. of Agriculture for 1899, pp. 415-428; Notes on Forest Problems, by Gifford Pinchot, Yearbook of Dept. of Agriculture for 1898, pp. 181-192; The Relation of Forests to Stream Flow, by James W. Toumey, Collaborator, Bureau of Forestry, Yearbook of Dept. of Agriculture for 1903; Use of Dead Timber in the National Forests, by E. R. Hodson, Circular No. 113, Forest Service, same Dept.; Suggestions for Forest Planting on the Semi-Arid Plains, by Gifford Pinchot, Circular No. 99, Forest Service, same Dept.; Practical Forestry on a Spruce Tract in Maine, by Austin Cary, 1907, Circular No. 131, Forest Service, same Dept.; What Forestry Has Done, by Treadwell Cleveland, Jr., Expert, 1909, Circular No. 140, Forest Service, same Dept.; Suggestions to Woodlot Owners in the Ohio Valley Region, by Samuel J. Record, Forest Assistant, 1908, Circular No. 138, Forest Service, same Dept.; Forest Planting on the Northern Prairies, by James M. Fetherolf, Inspector, 1908, Circular No. 145, Forest Service, same Dept.; The Preservative Treatment of Loblolly Pine Cross-Arms, by W. F. Sherfese, Chief, Office of Wood Preservation, 1908, Circular No. 151, Forest Service, same Dept.; Native and Planted Timber of Iowa, by Hugh P. Baker, Forest Assistant, 1908, Circular No. 154, Forest Service, same Dept.; What the National Forest Service Means, speech of Hon. Albert J. Beveridge of Indiana, in the Senate of the United States, Feb. 22, 1907, published by the U. S. Forest Service; Exhibit of Tree Planting on a Model Prairie Farm at the Louisiana Purchase Exposition, by Gifford Pinchot, Forester, Circular No. 29, Bureau of Forestry, U. S. Dept. of Agriculture; Exhibit of a Forest Nursery at the Louisiana Purchase Exposition, by Gifford Pinchot, Forester, Circular No. 31, same as last above; Progress Report on the Strength of Structural Timber, by W. Kendrick Hatt, Ph. D., Civil Engineer in the Bureau of Forestry, 1904; Forest Extension in the Middle West, by William L. Hall, Assistant Superintendent of Tree Planting, Division of Forestry, Yearbook Dept. of Agriculture for 1900, pp. 145-156; Forest Preservation and National Prosperity, portions of addresses delivered at the American Forest Congress, Washington, Jan. 2 to 6, 1905, by President Roosevelt, Ambassador Jusserand of France, U. S. Secretary of Agriculture Wilson, and others, Circular No. 35, Forest Service, U. S. Dept. of Agriculture; Forestry and the Lumber Supply, by

forestry in this and other countries; all write from practical experience and observation.¹⁰

§ 44. General physical effects of forests upon a country—

Climate.—Climate is the general condition of a place in relation to the various phenomena of the atmosphere, as to temperature, moisture, etc., especially as they affect animal life or man. In order to ascertain the climate of any particular locality, we must determine: First, the distance of the place from the equator; second, its elevation above the sea; third, the distribution of the land and water of the locality; fourth, the protection of the land, whether flat, hilly, or mountainous, and the character of the surface covering; fifth, the prevailing winds of the locality; and, sixth, how the locality is affected by the moisture in the atmosphere. Then, again, in order to tell how the forests affect the climate of a particular locality, it is necessary to determine which, if any, of these elements the forests affect, and how many, if they affect more than one, and to what degree. It is not the intent of this work to go into an extended discussion of the intricate subject as to the exact physical effect that the forests of a country have upon its climate. A great deal has been written upon this subject that can not be sustained; and many of the writings seem to be based upon the fact as to whether or not the writers were for the protection of the forests, or were in favor of their denuda-

Theodore Roosevelt, R. L. McCormick, and Gifford Pinchot, 1903, Circular No. 25, Bureau of Forestry, same Dept.; The Report of the Forester for 1906, by Gifford Pinchot, Forester, Annual Report Dept. of Agriculture for 1906, pp. 5-43; Progress of Forestry in 1906, by Quincy R. Craft, Forest Service, Yearbook Dept. of Agriculture for 1906, appendix, pp. 3-13; Practicability of Forest Planting in the United States, by William L. Hall, Chief of Division of Forest Extension, Bureau of Forestry, Yearbook Dept. of Agriculture for 1902, pp. 133-144; Methods of Increasing Forest Productivity, by E. E. Carter, Assistant Forester, 1909, Circular No. 172, Forest

Service, same Dept.; Practical Assistance to Tree Planters, Gifford Pinchot, Forester, Circular No. 22, Forest Service, same Dept.; Exhibit of Forest Planting in Woodlots at the Louisiana Purchase Exposition, by Gifford Pinchot, Forester, Circular No. 30, Bureau of Forestry, same Dept.; The Appalachian Forests, a National Question, by Hon. Curtis Guild, Jr., President of the American Forestry Association, 1910, Bulletin No. 1.

See, also, *American Forestry*, published monthly by the American Forestry Association, Washington, D. C.

¹⁰ See also, authorities cited under the effects of forests and their denudation, Secs. 54-57.

tion, which is usually based upon some personal interest in cutting them down or otherwise destroying them. But from a somewhat careful study of the subject, we have come to the conclusion that the existence or non-existence of forests in a certain section of a country has a direct influence upon its climate in respect to the temperature and humidity of the atmosphere, the evaporation of water, and the rainfall. As to what that influence, in our opinion, is, without going into an elaborate discussion of the various phenomena causing the same, but leaving that question to those who have made a scientific study of the subject, we will simply state our conclusions, and make reference to some of the authorities, for the benefit of those who may desire to pursue the subject further.¹

As to the effect of the forests upon the hot climate of India, it is said: "The influence of the forests on the climate of the country and the fertility of the soil is of special interest in India. As the forests are dependent for existence on the water supplied by the precipitation, by percolation, or by inundation, so are they locally responsible, in India even more than in the more temperate countries of the West, not only for the storage of rainfall in the soil, given off subsequently by gentle flow, but also for the supply, by transpiration from the foliage, of moisture to the air."² And, as we shall see, the influence of forests upon the climate of a country has more or less to do with their influence upon the stream flow of the country, either directly or indirectly, which is the main subject for discussion in this chapter.

§ 45. Influence of forests upon temperature.—The tendency of both the forest cover and the forest floor is to reduce the extremes of high and low temperature of the forest itself and the surrounding country in about the same manner as does a sheet of water. In

¹ See following sections, Nos. 45-53.

² Imperial Gazetteer of India, Simla, 1903, Vol. 3, Chap. 2, p. 3; data furnished to the author by Mr. L. M. Jacob, C. S. I., Secretary to the Government of India, Public Works Department.

One of the best works upon this subject that has come to the author's

attention is that of "Notes on the Influence of Forests on the Storage and Regulation of the Water Supply," by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, Calcutta, 1906, Forest Bulletin No. 9. In this work the subject is fully discussed from every phase.

other words, the extremes of heat and cold are modified by the influence of forests. Many observations and experiments have been made in Europe upon this point, especially in Austria, Bavaria, and Württemberg, and some few have been made in this country.¹ The effect of forests on the temperature of the air which surrounds them is of importance in that a low temperature encourages the precipitation of moisture in the air. Distinguished scientists, such as Humboldt, held that forests reduced the temperature of the air by preventing the heating of the soil by the solar rays, by vapor given off by the leaves, and by the nocturnal radiation from the large extent of the foliage; but it is only in comparatively recent years, from 1866, that careful observations were commenced in France, Germany, Austria, Switzerland, and other countries and by these surmise was reduced to a certainty.² In Austria, a series of observations were made by a line of stations beginning in the center of a large forest and extending step by step into the open country. All of these observations tended to

¹ Economics of Forestry, Fernow, 1902, pp. 63-70; The Earth as Modified by Human Action, Marsh, pp. 170-177; Becquerel, Des Climats et des Sols Boises, pp. 139-141; Die Physikalischen Einwirkungen des Waldes auf Luft, Ebermayer, Aschaffenberg, 1873; Wald, Klima und Waser, Lorenz, München, 1878; Die Klimen Die Erde, Woeickof, Jena, 1887; Die Bedeutung und Wishtogkeit des Waldes, Löffelholz-Colburg, Leipzig, 1872; Etudes sur l'Economie Forestiere, Calve, p. 24; Country Life in Piedmont, Gallenga, p. 24; Der Wald, Bossmassler, p. 158 *et seq.*; Memoria sur Boschi del Lombardia, Meguscher, p. 45; Cours Elementaire de Culture des Bois, Lorenz; Le Alpi che cingono l'Italia, Torino; A Primer of Forestry, by Gifford Pinchot, Forester, 1905, Part 2, pp. 56-62, Bulletin No. 24, Division of Forestry, U. S. Dept. of Agriculture; The Timber of the Edwards Plateau of Texas: Its Relation to Climate, Water Supply, and Soil, by

William L. Bray, Collaborator, Bureau of Forestry, 1904, Bulletin No. 49, Bureau of Forestry, U. S. Dept. of Agriculture; The Diminished Flow of the Rock River in Wisconsin and Illinois and Its Relation to the Surrounding Forests, by G. Frederick Schwarz, Field Assistant, Bureau of Forestry, Bulletin No. 44, Bureau of Forestry, same Dept.; Surface Conditions and Stream Flow, by Wm. L. Hall, Assistant Forester, and Hu Maxwell, Expert, 1910, Circular No. 176, Forest Service, same Dept.; The Relation of Forests to Stream Flow, by James W. Toumey, Collaborator, Bureau of Forestry, Yearbook of Dept. of Agriculture for 1903, pp. 279-288.

² See Notes on the Influence of Forests on the Storage and Regulation of the Water Supply, by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, 1906, Calcutta.

show that the influence of the forests upon the temperature was less and less the further they were made away from the forests. Therefore, should the forests of this country be destroyed, the complaint here will be similar to that of the Agricultural Society of France, after the forests of that country had been partially destroyed: "The winters have become severer, and the summers drier and hotter."³

As to their effect in the hot climate of India, it is said: "In those vast deciduous forests of Upper India where the leaf flush occurs in the early hot weather, the effect of the rapid unfolding of the new foliage in reducing the temperature is so marked as to be at once perceptible, and indeed these areas continue, so long as the leaves retain their vigor, cooler than the surrounding country."⁴

§ 46. Influence of forests upon humidity.—Humidity of the atmosphere is the amount of moisture contained in it. Relative humidity is the amount of vapor actually in the air, expressed as so much per cent of all the air can hold at the same temperature. It is greater in the forests and in the country in close proximity than it is further away. The amount of water that the air can hold changes when the temperature changes, and the cooler the air the less moisture it can hold.

According to observations made in different parts of Europe and in this country the average humidity is greater in the forest by from three to ten per cent than it is in sections where the influence of the forests is not felt. From the authorities upon the subject there seems to be a sort of reciprocal relation between the forests and humidity. Greater forests grow in climates where the humidity is great; and, upon the other hand, the forests themselves increase the humidity. With the loss of forest influence and with the rays of the sun pouring directly upon the earth the average humidity of the air is greatly lessened.¹ The effect of the

³ Economics of Forestry, Fernow, p. 61.

⁴ Imperial Gazetteer of India, 1903, Vol. 3, Chap. 2, p. 3.

¹ The Earth as Modified by Human Action, Marsh, 1885, pp. 177-179; Comptes rendus de L'Academie des

Sciences, Mengotti, 1866; Etudes sur les Torrents des Hautes Alpes, Surell, 1884, p. 98; Economics of Forestry, Fernow, 1902, pp. 437-439; Aspects of the Earth, Shaler, 1890, pp. 271-295; The Diminished Flow of the Rock River in Wisconsin and Illinois,

forests upon the evaporation of the precipitation which falls upon the earth in the form of rain, hail, snow, and dew, is to detain more of it on those portions of the earth which are sheltered by trees. It does this partly by tending to increase the rainfall, but its effect in lessening the loss of water through evaporation is probably much more important.² In fact, the effect is similar to that of irrigated fields in tending to increase humidity, discussed in a previous section, only it is in a much larger degree.³

§ 47. Influence of forests upon the rainfall.—There have been a great many discussions by scientists as to whether or not forests have an influence upon the precipitation upon the forested area and the surrounding country. Many experiments have been made in various parts of Europe and in this country which have sought to solve this problem. From an examination of these authorities upon this subject, we have come to the conclusion that forests do increase the precipitation of a country; but to what extent, the authorities are in hopeless confusion. This increase in the precipitation is caused by forests in two ways: First, from moisture that comes from outside of the forested area, as from moisture-laden clouds from the sea coming in contact with the cooler atmosphere above the forests. There is no question but that

and Its Relation to the Surrounding Forests, by G. Frederick Schwarz, 1903, Bulletin No. 44, Bureau of Forestry, U. S. Dept. of Agriculture, pp. 15-17; The Timber of the Edwards Plateau of Texas: Its Relation to Climate, Water Supply, and Soil, by William L. Bray, Collaborator, Bureau of Forestry, 1904, Bulletin No. 49, Bureau of Forestry, same Dept.; The Relation of Forests to Stream Flow, by James W. Toumey, Collaborator, Bureau of Forestry, Yearbook of Dept. of Agriculture for 1903, pp. 281-283; The Relation of Rainfall to Run-off, Water-Supply and Irrigation Paper No. 80, U. S. Geological Survey; A Primer of Forestry, by Gifford Pinchot, Forester, 1905, Bulletin No. 24, Part 2, Bureau of For-

estry, U. S. Dept. of Agriculture, pp. 62-66.

See, also, *Economie Forestiere*, by M. Huffel, Professor of the *Ecole Nationale des Eaux et Forêts* of France, 1904; Notes on the Influence of Forests on the Storage and Regulation of the Water Supply, by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, Calcutta, 1906.

² A Primer of Forestry, by Gifford Pinchot, Forester, Bulletin No. 24, Bureau of Forestry, U. S. Dept. of Agriculture, p. 63.

³ For the effect of irrigation upon climate, see Sec. 44.

See, also, *Imperial Gazetteer of India*, Simla, 1903, Vol. 3, Chap. 2, p. 3.

precipitation occurs when moisture-laden air is cooled to below dew point. Now, then, if the air in the woods is cooler than a saturated current sweeping over them from the outside, it must produce precipitation, which will fall upon the forests or at a greater or lesser distance from them. The second cause is from the moisture which rises from the inside of the forests until it reaches a cooler stratum of air, when it is precipitated back to the earth, in what is called the secondary rainfall. This latter is similar to, but in a larger degree, the effect of irrigated fields upon the rainfall of that particular section of the country.¹ By the destruction of the forests the two causes of the rainfall mentioned above will be removed. The moisture-laden clouds from the sea may pass on to other parts of the country. And the moist air from the woods will not exist, because there are no woods.

§ 48. Influence of forests upon fallen precipitation.—Whatever doubt there may be in the minds of some about the influence of forests upon the climate, discussed in the previous sections,¹ there can be no doubt in the minds of those who have investigated the subject with any degree of intelligence as to the influence of forests upon the precipitation, either in the form of rain, snow,

1 For the effect of irrigation upon the rainfall, see Secs. 48-53.

See, also, the authorities cited in the two preceding Secs., Nos. 45, 46.

See, also, *The Earth as Modified by Human Action*, Marsh, 1885, pp. 189-195; *Economics of Forestry*, Fernow, 1902, pp. 69, 70, 281, 438, 439; *Aspects of the Earth*, Shaler, 1890, pp. 273, 274, 295; *The Relation of Rainfall to Run-off*, by George W. Rafter, 1903, *Water-Supply and Irrigation Paper No. 80*, U. S. Geol. Survey.

It is said by Mr. Wilson that: "The British officials (in India) generally hold that the effect on forest denudation on rainfall is doubtful and much disputed." From *Irrigation in India*, 2d Ed. 1903, by Herbert M. Wilson, *Water-Supply and Irrigation Paper No. 87*, U. S. Geol. Survey, p. 45.

See, also, W. T. Thornton in *Journal of Society of Arts*, London, 1876, Vol. 26, p. 249.

But see for the report of the Government of India upon the effect of forests upon the climate generally, as contained in the *Imperial Gazetteer of India*, Simla, 1903, Vol. 3, Chap. 2, p. 3.

"Other observations undertaken in other countries serve to show that the rainfall increases with the extension of the forest area."—Notes on the Influence of Forests on the Storage and Regulation of the Water Supply, by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, *Forest Bulletin No. 9*, Calcutta, 1906, p. 12.

1 See Secs. 44-47.

hail, or dew, after it has fallen upon the earth. The rainfall, and by this we mean all four kinds of precipitation mentioned, under natural conditions, escapes in five different ways, and by a combination of all five, as follows: Evaporation, transpiration, surface run-off, seepage run-off, and deep seepage run-off. The most effective natural agent in regulating the disposition of the precipitation after it has fallen upon the earth is the forest. With the loss of the forest not only is this influence in this respect lost, but it is also followed by many disastrous results to the immediate section of the country where they have been destroyed, and also to the portions lying along the lower reaches of the rivers and streams of the country. The preservation of our forests have, therefore, become a great National economic question, that either directly or indirectly affects every portion of the country.

As we shall see in the following sections, the fact as to whether or not these forests in a country exercise their influence upon the fallen precipitation, has everything to do with the flow of the streams of that country. In the following sections we will first discuss the influence which the forests have upon the fallen precipitation in the order named above,² and then discuss some of the results of forest denudation.³

§ 49. Influence of forests upon fallen precipitation—Evaporation.—Evaporation and transpiration are frequently classed together as evaporation. In the irrigated portions of the West they are sometimes known as the "fly-off."¹ To be sure the moisture from the transpiration of plants is evaporated from their leaves. But, as far as these subjects apply to plant life, there is a distinction between them. In the case of transpiration, the moisture is received from the ground and is evaporated from the leaves only after it has passed through the fibrous growth of the plants. While evaporation, as far as our discussion is concerned, is that moisture which is taken from the surface of the leaves and plants having in some form been precipitated thereon from the clouds.²

² See Secs. 49-53.

See the subject of Precipitation in article on Water Circulation and Its Control, by Bailey Willis of the U. S. Geol. Survey, Vol. 2, p. 688, Report National Conservation Commission, 1909.

³ See Secs. 54-57.

¹ See Secs. 2, 26-28.

² For transpiration, see Sec. 50.

For transpiration and evaporation from irrigated fields, see Secs. 26-28.

By evaporation then is meant the moisture which passes into the atmosphere in the form of vapor from water or soil surfaces, and the objects resting upon such surfaces, including forests and other forms of vegetation. Under the best of conditions, a very large portion of the rainfall upon the earth is returned to the atmosphere through evaporation. The direct effect of the forests upon this great movement of water is to detain more of it on those portions of the earth which are sheltered by the trees. The colder and moister air of the forest has less capacity for taking up water vapor than has that of the open country. Evaporation is caused by the direct rays of the sun and by the winds. The crowns of the trees of a forest catch some of the rainfall without its touching the ground. This is almost immediately evaporated. Many observations have been made in Europe and in this country, the result of which is not less than 8 per cent of the total precipitation is held back from the ground by the tops of the trees, and this is almost immediately returned to the atmosphere after the rainfall has ceased.³

Upon the other hand, evaporation from the soil, both in the open and in the forest, takes a longer period of time than from the leaves of the trees or the forest cover. Then, again, the period of evaporation is much longer from under the forest cover and from their soil than in the open. This is so because the trees and the forest floor protect the moisture from both the wind and the sun. This protection is from the trees acting both as a shade and a wind-break, and from the loose, porous material which enters into the composition of the forest floor itself and permits the moisture to sink into the earth. The moisture evaporates

³ Economics of Forestry, Fernow, pp. 434-439; A Primer of Forestry, by Gifford Pinchot, Part 2, Bulletin No. 24, Bureau of Forestry, U. S. Dept. of Agriculture, pp. 63-66; The Relation of Forests to Stream Flow, by James W. Toumey, Collaborator, Bureau of Forestry, Yearbook of Dept. of Agriculture for 1903, pp. 281, 282; Surface Conditions and Stream Flow, by W. L. Hall, Assistant Forester, and Hu Maxwell, Expert, Cir-

cular No. 176, Forest Service, same Dept.

See subject on Evaporation in article on Water Circulation and Its Control, by Bailey Willis of the U. S. Geol. Survey, Vol. 2, p. 690, Report National Conservation Commission, 1909; Studies in the Movement of Soil Moisture, by Edgar Buckingham, Bulletin No. 38, Bureau of Soils, U. S. Dept. of Agriculture, 1907.

slowly from the matted leaves lying closely together, packed in horizontal layers, and these leaves also protect the under soil. Upon this subject, also, many observations and experiments have been made both in Europe and in this country. And, although the results as to the amount of the saving of the moisture in the soil, by the forests preventing evaporation, vary somewhat, there is no dispute but that a vast amount of it is saved from passing off in vapor by this means. From the most authoritative observations, it has been determined that the percentage of rainfall, evaporated from the surface of the ground, is about 40 per cent for the whole year in the open fields, and about 12 per cent from the forests, and that it is greater from under deciduous trees than it is from under those of the conifer class. It has also been determined that the evaporation from a saturated bare soil in the forest is about the same as from a water surface in the forest, other conditions being the same; and that the presence of forest litter, or the forest floor as it is termed, further hinders the evaporation from the soil to a remarkable extent, and that it saves at least 50 per cent of what would otherwise be evaporated.⁴ It has also been ascertained that the evaporation from snowfall is much greater than from rain. The greater the altitude above the sea, the greater the snowfall, and the greater is the effect of forests preventing evaporation. This is a powerful reason for preserving the forests in the mountains at the headwaters of the rivers and streams. Measures made in the mountains show that the evaporation from snow surfaces is four or five times as great as from water surfaces under similar exposure. In so far as the forests check the winter winds and provide shade from the sun, they lessen the evaporation from

⁴ See Economics of Forestry, Fernow, pp. 437-439; The Earth as Modified by Human Action, Marsh, pp. 187, 226 and note; Observation de Meteorologie, by Raoul de Drouin de Bouville, from experiments carried on in connection with the National Forest School of France; A Primer of Forestry, by Gifford Pinchot, Forester, 1905, Bulletin No. 24, Bureau of Forestry, U. S. Dept. of Agriculture, Part 2, pp. 63-66; The Relation of Forests

to Stream Flow, cited *supra*; The Timber of the Edwards Plateau of Texas, by William L. Bray, Bulletin No. 49, Bureau of Forestry, U. S. Dept. of Agriculture; The Diminished Flow of the Rock River in Wisconsin and Illinois, by G. Frederick Schwarz, Bulletin No. 44, same Dept.; The Relation of Rainfall to Run-off, by George Rafter, 1903, Water-Supply and Irrigation Paper No. 80, U. S. Geol. Survey.

snow. And that the forests do lessen the evaporation from snow surfaces is proved by the fact that snows remain much longer in the spring in well wooded regions than in the open country.⁵ All of this saving of moisture from evaporation, by the direct influence of forests, as we shall see in the subsequent sections, eventually finds its way into the streams and thus directly adds to their flow.⁶

§ 50. Influence of forests upon fallen precipitation—Transpiration.—The second means of escape of the water from the locality where it is precipitated is by transpiration.¹ With this subject we have less to do than with the others in the same connection, having less to do with the stream flow.

Transpiration is that portion of the rainfall which sinks into the soil and which is later taken up by the vegetation through the roots and given off to the atmosphere through the stems and foliage of the trees or other plants. It is sometimes classed in our Western States with evaporation as the "fly-off." Transpiration undoubtedly benefits the climate of forested areas by increasing the humidity of the atmosphere. And, as the atmosphere can only hold a certain amount of moisture before precipitation is caused, if it is partially saturated by the moisture from transpiration, it can take up less water by evaporation. Thus there is an indirect saving for stream flow of the moisture of the soil that would otherwise be evaporated, and, perhaps pass off to other sections of the country.² It has been determined

⁵ See the authorities cited in last note.

See, also, *The Earth as Modified by Human Action*, Marsh, pp. 206-213; *Economics of Forestry*, Fernow, pp. 74, 439, 444; *Forests and Snow*, by Professor L. G. Carpenter, 1901, Colorado Agricultural Experiment Station, Bulletin No. 55.

⁶ For the influence of forests upon seepage, see Secs. 52, 53.

¹ For the distribution of the rainfall, see Sec. 2.

² See *Influence of Forests on Humidity*, Sec. 46.

See, also, articles in *Archives des Sciences (Bibliothèque Universelle de Geneve)*, 1869, 1870, 1871; *Economics of Forestry*, Fernow, pp. 121, 437, 438; *The Earth as Modified by Human Action*, Marsh, pp. 183-188; *How Plants Grow*, Gray, Sec. 273; *Fur Baum und Wald*, Schlieden, pp. 46, 47 and notes; *Die Physikalischen Einwirkungen des Waldes*, Ebermayer, Vol. 1, pp. 150 *et seq.*; *Final Report of the State Geologist of New Jersey for 1894*, Vol. 3, p. 36; *The Relation of Forests to Stream Flow*, by James W.

that coniferous trees, especially pines, require only from one-sixth to one-tenth of the amount of moisture that the deciduous trees require for transpiration.³ In all trees and plants a certain portion of the moisture, not counted as transpiration, is retained by the plants themselves, and through chemical change becomes a part of the organic structure. The amount, however, is but a small proportion of that which is transpired.

The subject of the relation of transpiration has been one of considerable study in Europe and in this country, and it still remains unsettled to a large degree. As was said by Mr. Schwarz: "The other element of loss, namely, the amount of water consumed and transpired by trees, has been repeatedly investigated, but the subject is extremely complicated. The consumption varies with the kind of soil and its physical condition, with the amount of rainfall, with the condition of the atmosphere, and, in still greater measure, with the species of the tree and character of the forest. The figures resulting from these investigations show very wide limits, and it still remains somewhat doubtful whether forests, as compared with field crops, require more water for their growth, or less." ⁴

§ 51. Influence of forests upon fallen precipitation—Surface run-off.—By surface or superficial run-off is meant that portion of the precipitation which, from the time of its falling upon the earth until its exit from the drainage basin, passes over the surface of the earth without gaining access to the soil. Whatever may be said in regard to the influence of the forests upon evaporation and transpiration,¹ that influence is insignificant, comparatively speaking, with the influence that forests have upon the surface run-off; and upon this influence is closely related the subjects of seepage run-off and deep seepage run-off. ²

The forests along the upper reaches of the rivers and their

Toumey, Yearbook Dept. of Agriculture for 1903, p. 283.

See, also, the Imperial Gazetteer, India, Simla, 1903, Vol. 3, Chap. 2, p. 3.

³ Economics of Forestry, Fernow, pp. 121, 437.

⁴ The Diminishing Flow of the Rock

River in Wisconsin and Illinois, and Its Relation to the Surrounding Forests, by G. Frederick Schwarz, 1903, Bulletin No. 44, Bureau of Forestry, U. S. Dept. of Agriculture, p. 17.

¹ See Secs. 49, 50.

² See Secs. 52, 53.

tributaries regulate to an enormous extent the stream flow, by increasing the moisture-holding capacity of the soil, and by storing therein a large proportion of the water precipitated; and, for the time being retain it in the soil until it escapes through the earth by percolation, and thereby prevents to a large extent the surface run-off. The forests are, in effect, great natural reservoirs wherein the water is stored. In a feeble way, these have been imitated by man, by the construction of artificial reservoirs for the storage of water; and, regardless of the beneficial uses to which the water so stored may afterward be put, they have the same effect of regulating the stream flow, that is accomplished by Nature in a more simple way by means of the forests. And, by the reckless destruction of the forests, man is violating one of the first rules of Nature, which sooner or later, in some manner, will have to be recompensed for.³ The causes of forests regulating stream flow is due to a number of physical conditions peculiar to them, which are as follows: First, the undecomposed litter, consisting of leaves, twigs, and brush, which forms the upper layer of the forest floor, will itself absorb much water, as well as delay its run-off; second, the thick mat of leaves holds the moisture and keeps wet at a considerable distance down, long after those on top have become thoroughly dry; third, still lower down, the half-decayed rubbish retains more moisture, and is like a sponge in its water-holding power; fourth, the humus, or the forest soil proper, with its loose texture and large proportion of organic matter, is peculiarly fitted to hold the moisture and to delay percolation. It is thus that the forests build up great storage reservoirs, and the absence of forests causes the precipitation to immediately rush over the surface of the ground, with but a small portion being absorbed, on its way to the sea. Land that

³ For some of the results of forest destruction, see Secs. 54-57.

"The action of the forests on the flow of surface waters is so universally admitted that it serves no useful purpose to insist on it here. * * * In fact it may be stated that the flow of surface water is *completely arrested on forest slopes if these are clothed with healthy growth, so long*

as the leaf canopy is maintained." Notes on the Influence of Forests on the Storage and Regulation of the Water Supply, by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, Forest Bulletin No. 9, Calcutta, 1906, p. 16; see, also, application of results of European research to Indian conditions, pp. 21-42, same Bulletin.

is destitute of forests sheds water like the roof of a house, breeding floods after any considerable rain, while in the forests the rain is but slowly yielded to the streams.⁴ Artificial storage reservoirs

⁴ The authorities upon this subject are numerous, and the following are some of the most important that we have found: Aspects of the Earth, Shaler, 1890, pp. 185, 186, 272-275, 293, 298, and note; The Earth, Reclus, pp. 223, 291; The Earth as Modified by Human Action, Marsh, 1884, pp. 199-204; Economics of Forestry, Fernow, 1902, pp. 74-76, 444-447; Irrigation, Newell, pp. 27-36; Rivers of North America, Russell, 1902, pp. 230-240; The Forester an Engineer, by Fernow, Journal Western Society Engineers, Vol. 6, No. 5, Oct. 1901; speech of the Hon. Francis G. Newlands of Nevada in the Senate of the United States, Dec. 17, 1907, Vol. 42 Cong. Record, No. 14, pp. 500 *et seq.*

See, also, the Imperial Gazetteer of India, Simla, 1903, Vol. 3, Chap. 2, p. 3; speech of the Hon. Albert J. Beveridge of Indiana in the Senate of the United States, Feb. 22, 1907, issued by the U. S. Forest Service, Dept. of Agriculture; Die Physikalischen Einwirkungen des Waldes auf Luft und Boden, und seine Klimatologische und Hygienische Bedeutung, Ebermayer, 1873; Journal of the Society of Arts, Thornton, London, 1878, Vol. 26, p. 270; Manual of Forestry, Schlich, 5 Vols., 2d Ed., London, 1896; Questiones Naturales, Books 2 and 3, Seneca; Natural History, Pliny, Chap. 80; The Relation of Rainfall to Run-off, by George W. Rafter, 1903, Water-Supply and Irrigation Paper No. 80, U. S. Geol. Survey; Water Circulation and Its Control, by Bailey Willis of the U. S. Geol. Survey, Vol. 2, pp. 687-710, Report of the National Conservation Commission, 1909; The Timber—Vol. I—Kin. on Irr.

ber of the Edwards Plateau of Texas: Its Relation to Climate, Water Supply, and Soil, by William L. Bray, 1904, Bulletin No. 49, Bureau of Forestry, U. S. Dept. of Agriculture, pp. 26-29; A Primer of Forestry, by Gifford Pinchot, Forester, 1905, Bulletin No. 24, Bureau of Forestry, same Dept.; Surface Conditions and Stream Flow, by William L. Hall, Assistant Forester, and Hu Maxwell, Expert, Circular No. 176, Forest Service, same Dept.; The Diminished Flow of the Rock River in Wisconsin and Illinois, and Its Relation to the Surrounding Forests, by G. Frederick Schwarz, 1903, Bulletin No. 44, Bureau of Forestry, same Dept. pp. 18, 19; Grazing and Floods; a study of conditions in the Manti National Forest, Utah, by Robert V. R. Reynolds, Forest Examiner, 1911, Bulletin No. 91, Forest Service, same Dept.; Grazing on the Public Lands, extracts from the report of the Public Lands Commission, Bulletin No. 62, Forest Service, same Dept.; The Relation of the Southern Appalachian Mountains to Inland Water Navigation, by M. O. Leighton and A. H. Horton, U. S. Geol. Survey, Circular No. 143, Forest Service, same Dept.; Irrigation in India, 2d Ed., by Herbert M. Wilson, 1903, Water-Supply and Irrigation Paper No. 87, U. S. Geol. Survey, pp. 45, 46; Preliminary Report of the Inland Waterways Commission, Document No. 325, 60th Congress, 1st Session; The Relation of Forests to Stream Flow, by James W. Toumey, Yearbook of Dept. of Agriculture for 1903, pp. 283-287; Stream Flow in Relation to Forests, by Geo. W. Rafter, Vol. 22, Proc. Am. Forestry Assn.,

will partially compensate for this result; but these can be constructed only at enormous expense, while the forests not only do this work without expense, and at the same time they themselves are growing wood for the use of man.

§ 52. Influence of forests upon fallen precipitation—Seepage run-off.—Seepage run-off is that portion of the rainfall which sinks into the earth, but later reappears on the surface at lower elevations, and there uniting with the stream flow escapes from the drainage basins in the streams and rivers. This tends to give the streams and rivers a sustained flow during all portions of the year, and insures the permanency of springs, which in turn feed the streams. As there is but a certain amount of precipitation, it is evident that any factor which decreases the surface or superficial run-off must necessarily increase the seepage run-off. There are two principal factors that very materially influence the proportion of the precipitation to the seepage run-off, and these are: First, the rapidity of the rainfall; and, second, the condition of the soil as to its absorbent capacity receiving the rainfall. These factors as will be seen are somewhat blended together, and both can be, in a measure, regulated by man. Of course, no way has been devised for regulating the rainfall; but, after the rain has fallen on the earth, man can, in a measure, direct where it shall run.

It is well known from direct observation that a slowly falling, prolonged rain, even on comparatively naked slopes, is nearly all taken up by the soil. Upon the other hand, a heavy shower of short duration, falling on the same slope, may largely escape as surface run-off. Then again, when the soil has a large absorbent capacity, even the heaviest and most rapid rainfall may be all absorbed, and the surface flow reduced to a minimum.

1897, also reprint of same in an Annual Report, Fisheries, Game and Forest Commission, 1898; Natural and Artificial Forest Reservoirs of the State of New York, also by Rafter, Third Annual Report, Fisheries, Game and Forest Commission for 1897, Pub. 1899; Water Resources of the State of New York, also by Rafter, Parts 1 and

2, Water-Supply and Irrigation Papers Nos. 24 and 25, U. S. Geol. Survey; Data of Stream Flow in Relation to Forests, Trans. Association of Civil Engineers of Cornell University, Vol. 7, 1899; New Jersey Forests and Their Relation to Water Supply, by Vermeule, *The Engineering Record*, Vol. 42, No. 1, July, 1901.

There is nothing which exceeds the absorbent qualities of an old forest floor. The forest canopy also materially aids in breaking the force of the rainfall, and in perceptibly extending the period of time during which the rain reaches the ground, and in this way permits the water to soak into the soil, and thus lessens the surface run-off.¹

It is a matter of history that in sections of the country where forests have been destroyed, that the greater proportion of the rainfall rushes off almost immediately as the surface run-off. It has also been observed that the springs on the lower lands which formerly flowed with great permanency have dried up, and the smaller water courses fed by them have diminished both in number and volume, and in many cases have disappeared altogether.²

§ 53. Influence of forests upon fallen precipitation—Deep seepage run-off.—Forests also have their influence in adding to what is known as the deep seepage run-off, from practically the same causes that they add to the ordinary seepage run-off. But as the deep seepage run-off does not tend to add to the stream flow, especially in the drainage basins where the water is originally precipitated, we have little to do with the subject in this connection. Deep seepage run-off undoubtedly adds to the water supply of artesian basins, which subject will be discussed in another portion of this work as a part of the discussion concerning subterranean waters.¹ Much of the deep seepage run-off is also

¹ As the subjects of surface run-off and seepage run-off are closely related, see the authorities cited in the previous section, No. 51.

See, also, *The Earth as Modified by Human Action*, Marsh, 1884, pp. 215-234, and observations therein stated both in this country and in Europe; *The Earth*, Reclús, pp. 222-231, and observations there cited; *Aspects of the Earth*, Shaler, 1890, pp. 260, 261, 272, 273, 295; *Rivers of North America*, Russell, 1902, pp. 223-233; *Economics of Forestry*, Fernow, 1902, pp. 19, 20, 72-75, 77, 78, 444-447; *Irrigation*, Newell, 1906, pp. 27-36; *Water Circulation and Its Control*, by Bailey

Willis, U. S. Geol. Survey, Vol. 2, pp. 687-710, Report of the National Conservation Commission, 1909; *Water Resources*, by W. J. McGee, Secretary, Section of Waters, Vol. 1, pp. 39-49, same report.

² See authorities cited above.

See, also, *Influence on Springs in Notes on the Influence of Forests on the Storage and Regulation of the Water Supply*, by S. Eardley-Wilmot, Inspector General of Forests to the Government of India, *Forest Bulletin* No. 9, 1906, Calcutta, India, pp. 12-15.

¹ For artesian waters and wells, see Chap. 61, Secs. 1166-1184.

undoubtedly lost to man by sinking to great depths in the earth, or in finding its way in subterraneous channels to the sea.

§ 54. Damages resulting from immediate surface run-off.—From the authorities cited under our notes in the previous sections, there can be no doubt but that the forests along the watersheds of our rivers and streams exert an enormous influence upon the regularity of their stream flow.¹ It is also settled beyond all controversy that, when large forested areas exist, the immediate surface run-off is decreased, and the seepage run-off increased; and, when these same areas have been denuded of their forests the exact reverse is the case—the immediate surface run-off is increased and the seepage run-off is decreased. As there is but a certain amount of precipitation in any one drainage basin during the course of a year, and the greater portion of that falling within a limited period of time, it therefore follows that, if this rushes off the land almost immediately after it has fallen into the streams and is carried into the lower rivers, it stands to reason that during the greater portion of the dry season of the year, in that particular section of the country, there will be left but a comparatively small amount of water for all uses. Also in the lower reaches of the rivers, great damages are liable to result.

There are three principal classes of resultant damages from the immediate surface run-off, which may be classified, as follows: First, floods;² second, the loss of water during the dry season of the year to the injury of the cultivation of land by irrigation,³ navigation,⁴ development of power,⁵ and manufacturing purposes;⁶ third, erosion or soil washing.⁷ We will discuss these subjects briefly in the above order.⁸

§ 55. Damages from immediate surface run-off—Floods.—As we have seen in preceding sections, forests act in the capacity of

¹ See Secs. 48-53, for the influence of forests upon fallen precipitation.

² See Sec. 55.

See, also, for irrigation as a means of preventing floods, Sec. 11.

For irrigation as an aid in the reclamation of swamp lands, see Sec. 14.

³ See Sec. 56.

⁴ Sec. 56.

For irrigation as an aid to navigation, see Sec. 12.

⁵ See Sec. 56.

For irrigation as an aid to the development of power, see Sec. 15.

⁶ See Sec. 56.

⁷ See Sec. 57.

⁸ See Secs. 55-57.

great storage reservoirs, conserving the rainfall in flood time and giving it out gradually by means of the seepage run-off in the dry seasons.¹ By doing this, they are the greatest natural agencies in preventing floods. But where the forests have been destroyed along the watersheds of our rivers, the water from rains and melting snow rush off the land in torrential streams, and thereby increase the volume of the flood waters that are so destructive on the lower reaches of the rivers. The direct results of floods are of two classes: The damages caused by the temporary high waters; and, second, the damages caused by extending the area of swamp lands below.

In regard to the first class, it is noticed that in this country the floods are becoming worse as the years go by. This may not be true for each successive year upon any particular river, as it depends largely on the rainfall upon the drainage basin of that river. But nearly every spring on some river in this country, a new height is reached by the crest of the floods, new lands inundated that were formerly considered out of danger, and greater damage done to all kinds of property. It is generally conceded by the authorities that the destruction of the forests on the lands above are the primary cause of this increase in the volume of floods.²

¹ See Secs. 51-53.

² See upon the subject of floods caused by forest destruction, *The Earth*, Reclus, 1862, pp. 317-338, and authorities there cited; *The Earth as Modified by Human Action*, Marsh, pp. 227-338, cases and authorities there cited; *Rivers of North America*, Russell, pp. 229-233; *Aspects of the Earth*, Shaler, pp. 188, 189, 193; *Economics of Forestry*, Fernow, pp. 73-75, 276, 277, 318, 319, 363, 445, 446; *Irrigation*, Newell, pp. 30-33; *A Primer of Forestry*, by Gifford Pinchot, Part 2, pp. 67-73, Bulletin No. 24, Bureau of Forestry, U. S. Dept. of Agriculture; *Grazing and Floods*, by Robert V. R. Reynolds, 1911, *Forest Examiner*, Bulletin No. 91, Forest Service, same department; *Surface*

Conditions and Stream Flow, by Wm. L. Hall, Assistant Forester, and Hu Maxwell, 1910, Cir. No. 176, Forest Service, same department; Same in Vol. 2, pp. 112-125, Report of the National Conservation Commission, 1909; *Floods*, by M. O. Leighton, Chief Hydrographer, U. S. Geol. Survey, Vol. 2, pp. 95-111, Report of the National Conservation Commission, 1909; *Water Circulation and Its Control*, by Bailey Willis, U. S. Geol. Survey, Vol. 2, pp. 687-710; *Imperial Gazetteer of India*, Simla, 1903, Vol. 3, Chap. 2, p. 3.

See, also, *Influence of Forests on the Regulation of Torrents*, in notes of the *Influence of Forests on the Storage and Regulation of the Water Supply*, by S. Eardley-Wilmot, In-

As to the second class of damages mentioned above, they are largely the result of the rivers' being unable to carry off the flood waters, and, instead of temporary, the damages become permanent. The swamp and overflow lands of the United States are also annually being extended.³

As a remedy for the recurring and increasing floods, we can do no better than to quote from Elisee Reclus, who wrote in the year 1862, after having made a careful study of the causes of floods, especially in France and Italy, and in which he said: "Man should make it his task to watch the drop of rain as it falls from the clouds, to follow it in its course, to arrest it in its progress when it would help to swell the dreaded flood, and to employ it for the benefit of agriculture, navigation, and manufacture. On every mountainside and elevated plateau he may avail himself of the powerful remedy for the prevention of floods, by replanting them with trees."⁴ The same method for preventing floods advocated by Reclus applies with equal force in this country to localities where the forests have been destroyed. But at this date, before our forests are entirely destroyed,⁵ I can only add one thing to his statement, and that is, instead of imitating Nature by "replanting" forests, which will take decades to attain

spector General of Forests to the Government of India, 1906, Forest Bulletin No. 9, Calcutta, pp. 17-20.

See, also, *Irrigation as a Means of Preventing Floods*, Sec. 11.

³ See *Irrigation as a Means of the Reclamation of Swamp Lands*, Sec. 14.

See, also, Vol. 1, p. 23, of the Report of the National Conservation Commission, 1909, where it is said: "Through imperfect control of the running waters lowlands are temporarily or permanently flooded. It is estimated that there are in the mainland United States about 75,000,000 acres of overflow and swamp lands requiring drainage."

See, also, report of W. J. McGee, Secretary of the Section of Waters, p. 42, same Vol. as last above.

See, also, Report of Geo. W. Woodruff, Secretary of the Section of

Lands, pp. 83, 84, same Vol. as last above.

See, also, the many bulletins issued by the U. S. Dept. of Agriculture upon the subject of the reclamation of swamp lands.

⁴ *The Earth*, Reclus, p. 328.

See, also, upon this subject *Die Physikalischen Einwirkungen des Waldes auf Luft*, etc., Ebermayer, 1873; *Die Bedeutung und Wichtigkeit des Waldes*, etc., Chrestomatic, Loffelholz-Colberg, 1872; *Wald, Klima und Wasser*, Lorenz, 1878; *De Klimen Erde*, Woeichhof, 1887; *Les Foret de la Gaule*, Maury, 1867; *Les forets et la reboisement dans les Pyrenees Orientales*, De Boixo, 1894; *Reboisement et Gazonnement des montagnes*, 2d Ed., Demontzey, 1882.

⁵ For the destruction of our forests, see Sec. 43.

any considerable growth, let us leave Nature alone and preserve her works by preventing, as far as possible, the forest from being destroyed.

§ 56. **Damages from immediate surface run-off—Loss of water.**—By the destruction of the forests, causing the greater portion of the precipitation to run off soon after it has fallen, it follows that the smaller proportion is not sufficient, in many instances, to keep the streams up to the point that they were wont to flow before such destruction, or to supply the demands that are made upon the water for irrigation, navigation, development of power, and manufacturing purposes. This causes the second class of resultant damages, under our classification.¹

In modern India, irrigation is practiced to a greater extent than in any other country in the world, and upon the relation of the forests to irrigation, it is said: "In short, the forests form the head works of Nature's irrigation scheme in India, and if these are injured or destroyed, the advantages of a regular water supply may be replaced by the tempestuous action of sudden floods until such time as man, with the aid of costly appliances, intervenes to restore equilibrium."² The cultivation of lands by irrigation is mostly confined to the Western portion of the United States, and depends largely upon the waters of mountain streams, and that, too, upon the flow of those streams during the months of June to September. Instances are too numerous to cite, where by forest destruction, the water rushes down the steep mountain-sides immediately after the storms, and where the flow of those streams at times has ceased entirely during the months named, and at the very time when the water was needed most. And, for this use, in order to hold back the water that rushes down toward the ocean in flood season, the construction of great reservoirs is necessary to perform the same functions that the forests

¹ See Sec. 54.

"The destruction of the forest by fire results directly in an impairment of the regularity of stream-flow, tending to cause an alternation of flood and drought. Thus are brought about great losses to irrigation, water power, navigation, and other interests."—

Forest Fires, by Clyde Leavitt, U. S. Forest Service, Vol. 2, p. 390, Report of National Conservation Commission, 1909.

² Imperial Gazetteer of India, Simla, 1903, Vol. 3, Chap. 2, p. 3; Forestry and Irrigation, Elliott, 1906.

formerly performed, namely, to hold back the water until it is needed.³ Then again, no matter with how great engineering skill these reservoirs are constructed, after a heavy rain or spring thaw, there being no forests to offer obstructions to the flow of the streams, they at times become mountain torrents, sometimes carrying everything before them, and there is always greater danger of dams and reservoirs going out, and thus adding to the disaster below.

It is the early history of this country that the most of our larger rivers were navigable to a far greater extent than is the fact at the present time. All of the great rivers have their headwaters in the mountains, and all of their drainage basins in their natural state were forested. And hence, while in that condition, the waters of the streams feeding these rivers were held back by the forests during the reavy rains and spring thaws, and were gradually let down during the later months. This natural regulation of the flow kept a fairly even volume in the greater rivers below, even during the dry portion of the year. Upon this subject Professor Shaler says: "With the removal of the forests, the winter floods increase in magnitude, and the summer droughts leave so little water in the streams that they are constantly becoming less serviceable for navigation."⁴ And, as was said by Senator Newlands of Nevada, in a speech before the Senate of the United States, upon the Inland Waterway Commission Bill: "These waters rush down in torrential streams in the spring months and destroy property, and then during the summer and fall months, the waters having rushed down to the ocean and having been wasted, the river itself is reduced to an attenuated stream upon which boats can not float."⁵ What we have said

³ Irrigation, by Newell, pp. 57-71; Aspects of the Earth, Shaler, p. 189.

⁴ Aspects of the Earth, Shaler, 1890, p. 293.

⁵ Speech of Dec. 17, 1907, Cong. Record, Vol. 42, No. 14, p. 500.

See, also, Preliminary Report of the Inland Waterways Commission, Document No. 325, 60th Congress, 1st Session, 1908, p. 21; General Relations of Forests and Streams, by Raphael Zon, Chief, Office of Silvics, U. S. Forest

Service, pp. 505-513, same Report as last above; Special Relations of Forests to Rivers in the United States, by W. W. Ashe, Forest Assistant, U. S. Forest Service, pp. 514-534, same Report as last above; Report of the Secretary of Agriculture of the Southern Appalachian and White Mountain Watersheds, Dec. 11, 1907, p. 18; The Relation of the Southern Appalachian Mountains to Inland Water Navigation, by M. O. Leighton and A. M.

in regard to damages from immediate surface run-off to navigation applies with equal force to all other uses of water such as that for the development of power and for manufacturing purposes. If the water is not in the streams when it is needed, it certainly can not be used. Many power plants have to shut down during the low water seasons, and many manufacturing establishments have to cease their operations, or change their motive power.⁶ By the protection of existing forests and reforestation in places where they have been destroyed, many of these resultant damages from immediate surface run-off may be averted.

§ 57. Damages from immediate surface run-off—Erosion.—Our third and last class of resultant damages from immediate surface run-off is that of erosion or soil washing.¹ Erosion is the term given to weathering, corrosion, and transportation, which by their combined agencies lead to the removal of land upraised above the sea, and the production of a vast array of ever-changing topographical forms.² This erosion of land becomes a source of damage and expense in at least three distinct ways: First, the loss

Horton, U. S. Geol. Survey, 1908, Cir. No. 143, Forest Service, U. S. Dept. of Agriculture.

See, also, *Irrigation as an Aid to Navigation*, Sec. 12.

“In the degree that the forests are damaged on the high watersheds, then, inevitable damage results to water power and navigation through increased extremes of high and low water.”—Secretary of Agriculture James Wilson, in his report of *The Southern Appalachian and White Mountain Watersheds*, Dec. 11, 1907, p. 19.

See, also, *the Relation of the Southern Appalachian Mountains to the Development of Water Power*, by M. O. Leighton, M. R. Hall, and R. H. Bolster of the Geological Survey, 1908, Cir. No. 144, Forest Service, U. S. Dept. of Agriculture.

“Nearly all the freshet and flood water runs to waste, and the low wa-

ters which limit the efficiency of power plants are increasing in frequency and duration with the increase of flood run-off.”—Report of the National Conservation Commission, 1909, Vol. 1, p. 22.

See, also, *Developed Water Power*, compiled by the Bureau of the Census, under the direction of W. M. Steuart, Chief Statistician for Manufactures, Discussion by M. O. Leighton, Chief Hydrographer, U. S. Geol. Survey, Vol. 2, pp. 141-158, Report National Conservation Commission, 1909; *Undeveloped Water Powers*, by M. O. Leighton, Vol. 2, pp. 159-170, same report as last above.

See, also, *Irrigation as an Aid to the Development of Power*, Sec. 15.

¹ For classification, see Sec. 54.

See, also, *Irrigation as a Conserver of Soil*, Sec. 13.

² *Rivers of North America*, Russell, 1902, p. 46.

of the soil itself by its being washed away; second, the covering up of good land by sand, gravel, and rock; and, third, the filling up of the streams and rivers, and especially those that are navigable. These subjects will be discussed in the order named.

Erosion or soil washing is one of the most serious results of forest destruction, and has been so considered not only in this country, but in all parts of the world. In certain sections, where the forests have been destroyed, it has completely changed the topographical features of the country, by the washing away of immense quantities of soil from large areas of land. Not only is the soil carried down by the streams in flood time, but also great quantities of gravel, sand, and even rock. Some of us who have stood upon the banks of the Missouri River, or as it is sometimes called, the "Big Muddy," and have watched its turbid waters, have had little thought as to its cause or the results therefrom, and very little concern in the matter, except that in some form or other we would have to drink the stuff. We did not stop to consider that the "silt" in the water, which caused its turbidity, was composed of the most fertile portions of our richest lands, transferred from a blessing to a curse.³ The action of the forests and other vegetation is not confined merely to imbibing water falling from the clouds; it also assists the superabundant moisture in penetrating the interior of the ground. Trees, after they have received the water upon their foliage, let it trickle, drop by drop, on the soft forest floor, and thus facilitate the gentle permeation of the moisture into the substratum; another part of the rainfall runs down the trunks of the trees and along the roots, and at once finds its way to the lower strata. At the same time, the roots, with their long, clinging tendrils, hold the earth together,

³ For the estimated amount of soil that is annually washed toward the sea, see Sec. 13, and authorities cited.

"The freshets are attended by destructive soil erosion. The soil matter annually carried into the lower rivers and harbors or into the sea is computed at 783,000,000 tons."—Report of the National Conservation Commission, Vol. 1, p. 22, 1909.

See, also, Lands, by George W.

Woodruff, Secretary, Section Lands, same report, 1909, Vol. 1, pp. 77-79; Water Circulation and Its Control, by Bailey Willis, U. S. Geol. Survey, Vol. 2, pp. 699, 707, same report as last above; Methods Which Should Be Adopted by Private Owners to Insure the Perpetuation of Our Timber Supply, by C. S. Chapman, U. S. Forest Service, Vol. 2, p. 727, same report as last above.

and with the aid of the forest floor prevent much of the soil from being washed away, even in the heaviest rainfall. With the destruction of the forests, the soil and other friable matter are washed away, especially from the steeper lands, and thus their destruction also destroys the ground upon which they stood. And, thereafter the water rushes off the hard clay or rock in torrential floods.⁴ Of course, we can not attribute all of this loss of soil solely to the destruction of the forests. But by those who have made a study of the subject, and those who are best able to judge, it is counted as being the principal agency.

The covering up of good lands by the silt and debris from erosion is caused by such debris first filling the bottoms of the rivers and streams, and afterward being carried over the alluvial lands. When a torrent escapes from the lateral confinement of the bed of a stream, it spreads and divides itself into numerous smaller streams, which shoot out in different directions over the bottom lands, each carrying with it its quota of sand and gravel. When the floods subside this debris is left upon the top of the good soil, sometimes many feet in depth. In this way many millions of acres of good agricultural lands have been irretrievably ruined. Owing to the fact that the denudation of the forests

⁴ See authorities cited above.

See, also, Secs. 11-13.

In 1906, Professor Shaler of Harvard, one of the greatest authorities upon this subject, estimated that in the upland regions of the States south of Pennsylvania, 3000 square miles of soil had been destroyed as the direct result of forest denudation, and that the destruction was going on at the rate of 100 square miles of fertile soil per year. *Aspects of the Earth*, Shaler, pp. 261, 290-299. See, also, pp. 337, 338.

In 1861, Messrs. Humphreys and Abbott, in the course of a notable survey of and report on the physics and hydraulics of the Mississippi River, estimated that the river transported and discharged into the Gulf of Mexico 406,250,000 tons of sediment annu-

ally. *Report upon the Physics and Hydraulics of the Mississippi River*, by Humphreys and Abbott, 1861, pp. 137-149.

See, also, *The Earth*, Reclus, p. 292; *Economics of Forestry*, Fernow, p. 76; *The Earth as Modified by Human Action*, Marsh, pp. 249, 250, 503, 523, and notes; *Rivers of North America*, Russell, pp. 70-75; *Memoire sur les Populations des Hautes Alpes*, in *Memoires de l'Academie des Sciences, Morales et Politiques*, 1843; *Études sur l'Economie Forestiere*, Calve, pp. 66, 67; *Les Forets et la reboisement dans les Pyrenees orientales*, De Boixo, Paris, 1894; *Reboisement et Gazonnement des montagnes*, 2d Ed., Demontzey, Paris, 1882; *Forestry in Europe—Reports from the Consuls of the United States*, Washington, 1887.

in this country has not yet proceeded to the extent that it has in many portions of the Old World, the loss from this cause has not been so great as there. But the experience of those countries will be the experience of this country, as surely as night follows day, if the forest destruction continues at the rate that it is progressing at the present time.⁵ The enormous power of water

⁵ As to the forest destruction in this country, see Sec. 43.

"The abuse of the right of pasturage and the felling of the woods have stripped the soil of all its grass and of all its trees, and the scorching sun bakes it to the consistency of porphyry. When moistened by the rain, as it has neither support nor cohesion, it rolls down to the valleys, sometimes in floods resembling black, yellow, or reddish lava, sometimes in streams of pebbles, and even huge blocks of stone. . . . Vast deposits of flinty pebbles, many feet in thickness, which have rolled down and spread far over the plains, surround large trees, bury even their tops, and rise above them, leaving the husbandman no longer a ray of hope."—From an address of Jerome Adolphe Blanqui, French Economist, before the French Academy of Moral and Political Science, on the 25th of November, 1843; see *Memoires de l'Academie des Sciences, Morales et Politiques*, of that date.

"The felling of the woods produces torrents which cover the cultivated soil with pebbles and fragments of rock, and they do not confine their ravages to the vicinity of the mountains, but extend them into the fertile fields of Provence and other Departments, to the extent of forty or fifty leagues."—Lorenz, quoting from Ueber die Entwaldung der Gebirge, Marchand, 1849, p. 17, in *Cours Elementaire de Culture des Bois*, Lorenz, 1878.

"It is estimated that the mass of solid matter that is annually washed

down by the River Po is 822,000,000 cubic metres, and that out of this amount there are about twenty times as much left upon the lower lands as the river delivers into the Adriatic."—*Delle Immediata Influenza delle Selve sul corso delle Acque*, Castellani, Vol. 1, pp. 42, 43.

For the transporting power of water, see *The Earth as Modified by Human Action*, Marsh, 1894, pp. 263-269.

See, also, *The Earth as Modified by Human Action*, 1884, pp. 241-283; *The Earth*, Reclus, pp. 284-295; *Economics of Forestry*, Fernow, 1902, pp. 75, 76; *Rivers of North America*, Russell, pp. 44-51; *A Primer of Forestry*, by Gifford Pinchot, 1905, Bulletin No. 24, Bureau of Forestry, U. S. Dept. of Agriculture, pp. 69-71; *Etude sur les Torrents des Hautes Alpes*, Surrell, 1884, p. 152; *La Provence au point de vue des Bois, des Torrents Inondations*, De Ribbe, 1857; *Travels in France*, Young, Vol. 1, Chap. 1; *Histoire, etc., des Hautes Alpes*, Ladoucette, 1884, p. 354; *Etudes sur l'Economie Forestiere*, Calve, 1862, pp. 66, 67; *Der Wald*, Hohenstein, p. 177; *Ses Climats, etc., les Sols boisés et non boisés*, Becquerel, 1853, p. 314; *Comptes rendus de l'Academie des Sciences*, 1866, Mengotti; *Giornale di Agricoltura*, November 30, 1873; *Progetto di Legge per la Vendita di beni incolti*, Torelli, 1872; *Des Travaux Publics dans leurs Rapports avec l'Agriculture*, Dumont, 1847; *Scientific Guide to Switzerland*, Morell, p. 10.

in erosion is well illustrated by the hydraulic mining operations being carried on in many parts of the West, where, comparatively speaking, but a small stream is thrown and yet small mountains are washed away.⁶ And both the power of water to tear away the earth and to carry it away, discussed above, is still further illustrated by the use that is made of it by ingenious engineers in the construction of dams and embankments. The material is torn from banks above by the action of water through hydraulic rams, and is washed along by the water through flumes to the place where the dam or embankment is being built, and there deposited, the only handling of the material being by water.⁷ The results of these efforts, however, are insignificant, as compared with the results of a mountain torrent in wearing down a mountain and spreading it over the plains and valleys below. Another great source of damage from erosion is the filling up of the channels of the streams and rivers by the debris and material carried down. Because of this, rivers, formerly navigable, have become useless for such purpose; great damage has been done to the works constructed to improve navigation; lands have been permanently flooded, and the streams themselves have at times cut their way through tracts of land and made new channels for themselves.⁸ If the streams and rivers of this country ran clear, as was usually the case before the extensive destruction of the forests, the control and regulation of their waters would be comparatively an easy matter. But sediment-laden as they are, they present some of the most difficult and complex engineering

See, also, *Grazing and Floods*, by Robert V. R. Reynolds, *Forest Examiner*, 1911, Bulletin No. 91, Forest Service, U. S. Dept. of Agriculture.

⁶ For hydraulic mining and the laws for the preventing of the washing of debris, see Secs. 1136-1147.

⁷ "A dam was constructed in this method near Santa Fe, New Mexico, and other works were constructed on the Turlock Canal in California and a number of other places in the West where irrigation works were constructed."—Newell, *Irrigation*, pp. 170-173.

⁸ See *Irrigation as a means of Preventing Floods*, as an Aid to Navigation, as a Conserver of the Soil, and as an Aid in the Reclamation of Swamp Lands, Secs. 11-15; *The Earth as Modified by Human Action*, Marsh, pp. 249-263, 269, 485-504; *Economics of Forestry*, Fernow, pp. 12, 74-76; *Aspects of the Earth*, Shaler, pp. 268, 269, 293-299; *The Relation of the Southern Appalachian Mountains to Inland Navigation*, by M. O. Leighton and A. H. Horton, U. S. Geol. Survey, Cir. No. 143, Forest Service, U. S. Dept. of Agriculture.

problems, to say nothing about the resulting damages and the enormous expense to the National Government and to the States in keeping the channels clear.

§ 58. The perpetuation of our forests.—From the discussion in the preceding sections of this chapter, and the great number of authorities there cited, some of whom were, and are, the most eminent students of the subject on earth, it must be evident that the perpetuation of our forests is one of the most important economic questions that today confronts the American people. Not only is this true in regard to the perpetuation of our timber and lumber supply, but it is also true in regard to the relation of the forests to stream flow, upon the uniform regularity of which depend many of the most important physical conditions and industries of the country.¹ Since the annual timber cut of the United States is from three to four times as great as the annual growth, not counting the destruction by other means,² it must be evident that the present situation can not be improved, unless all of the existing timber lands can be carefully protected; and, under strict forest management they can be made to grow at least from three to four times as great an amount as is now annually grown. This situation has been successfully met with in other countries, and undoubtedly can be in the United States.³ In the

¹ See Secs. 44-57.

As was well summed up by Mr. J. Storr Lister, Chief Conservator of Forests, Cape Town, South Africa, in his report of March 21, 1908, for the fifteen months ending Dec. 31, 1907: "Without strict supervision these wooded areas will be considerably denuded, and apart from the mere question of timber supply, the subject of forestry in its bearing on climate, soils, rainfall, and water supply would not appear to have received sufficient consideration. The beneficial effects forest tracts have on climate by purifying the atmosphere, conserving and distributing moisture, and subduing aridity is well established, while another important part is played by

these areas in the distribution of rainfall. Other uses are included in the action of forests in retarding evaporation of moisture, regulating the flow of water (rain after it has fallen) on water sheds, thereby preventing or minimizing floods, and in checking erosion of soils by action of wind and water."—Report of Chief Conservator of Forests, Cape Town, 1908, p. 1.

² See Secs. 41-43.

For the Destruction of Our Forests, see Sec. 43.

³ See *Forestry in Europe*, Reports from the Consuls of the United States, Washington.

See, also, the great number of Bulletins issued by the Forest Bureau, and the Forest Service, U. S. Dept. of

following sections, we will discuss very briefly what has been done toward the preservation of our forests by the United States, by the States, and by the individual, reserving a longer discussion to a work which will be subsequently published, and which is already written, to a great extent, by the author of this.⁴

§ 59. The perpetuation of our forests—What has been done by the United States.—Under the impetus given by the messages of recent Presidents of the United States, and especially by those of President Roosevelt, within the last few years, Congress has practically re-enacted all of the laws of the general Government relating to the forests and to the public lands upon which they are grown. Under the authority granted by these laws large areas of forested public lands have been set aside and reserved as National forests, with the view of not only protecting the growing timber, but also the watersheds of our most important streams

Agriculture, many of which have been cited in the preceding notes.

See, also, *Methods Which Should Be Adopted by Private Owners to Insure the Perpetuation of Our Timber Supply*, by C. S. Chapman, U. S. Forest Service, Vol. 2, pp. 711-724, Report of the National Conservation Commission, 1909; *What the States Should Do to Perpetuate the Forests*, by Filibert Roth of the University of Michigan, Vol. 2, pp. 725-747, same Report as last above; *What Forestry Has Done*, by Treadwell Cleveland, Expert, 1908, Cir. No. 140, Forest Service, U. S. Dept. of Agriculture, especially as relating to foreign countries; *Handbuch der Forst Politik*, Max Endres; *Manual of Forestry*, W. Schlich.

See, also, the various text books upon forestry and forest economics cited in the preceding notes.

See, also, the annual Reports of the Superintendent of Forestry of the Dominion of Canada, issued by the Department of the Interior, Ottawa, giving full details as to how the forests are perpetuated in the Dominion.

See, also, *Review of Forest Administration in British India for the year 1903-4*; and same for the year 1905-6, by S. Eardley-Wilmot, Inspector General of the Forests to the Government of India, Calcutta, 1906-7.

See, for Italy, *Legge Forestale*, 20 giugno, 1877, *Bollettino N. 3917*; *Bollettino Ufficiale per l'Amministrazione Forestale Italiana*, 4, 31 dicembre, 1900; for Sweden, see *Report on Forestry in Sweden*, by Gen. C. C. Andrews, Minister to Sweden, 1900, Doc. No. 452, 56th Congress, 1st session; *Berattelse öfver Nunnans Harjningar, 1892-1902*, af C. G. Ramsted, Stockholm, 1904; for the Cape of Good Hope, see *Act to Provide for the Betterment of Forests of August 17, 1888*, and *Act of November 14, 1902*, amending the same; see, also, the various reports of the Chief Conservator of Forests, Cape Town.

⁴ See Kinney on *Forests, Forestry, and Forest Laws*. This work will be shortly published.

and rivers.¹ A National "Forest Service" has also been established as a branch of the Department of Agriculture.² Upon the Forest Service is devolved the duty of the absolute protection of the National forests from trespass of every kind, the prevention of forest fires as far as possible, the planting of new forests, and the replanting of old, and the regulation and sale of all timber taken from such forests. It was not without a struggle that these laws were originally enacted, and it is not without a constant struggle that they are preserved in the statutes. It has been hard to break those who were specially interested, for personal gain, in the destruction of the forests belonging to the United States and to every citizen therein, from their predatory habits. But, as far as the general Government is concerned, it now has the matter well in hand, by the more recent laws enacted upon the subject. And, in general, we will say, without going into the discussion of the subject, which would take far too much space as far as this work is concerned, these laws have been sustained and upheld by the courts. And, with the bare citation of the statutes upon the timber lands and forest reserves, for the present, we will leave the subject.³ By the Act of March 11, 1911,⁴ Congress took an advanced step toward the conservation of stream flow, for the purpose of maintaining the navigability of navigable streams, by providing for the purchase of lands along the watersheds of navigable streams, which lands are in the hands of private parties. And, for this purpose the "National

¹ Of the amount estimated by the U. S. Geol. Survey, there were on July 1, 1908, 156,082,753 acres in National Forests.—Vol. 2, p. 711, Report of the National Conservation Commission, 1909, by C. S. Chapman of the U. S. Forest Service.

² "Forest Service" has been the name since July 1, 1905, of that branch of the Department of Agriculture which was previously called the "Bureau of Forestry," and, earlier still, the "Division of Forestry."—The Forest Service: What It Is and

How It Deals with Forest Problems, by Gifford Pinchot, Forester, Cir. No. 36, Forest Service, U. S. Dept. of Agriculture.

³ For Statutes upon the subject of Timber Lands, and Forest Reserves, see 7 Fed. Stats. Ann., 1905, pp. 288-317; Vol. 10 *Id.*, pp. 404-407; Supp. *Id.* 1909, pp. 661-672; Supp. 1911, see part under the same title.

See, also, for Forest Reserves, Secs. 413-425, 954-962.

⁴ Public, No. 435; 62d Congress, 1st session.

Forest Reservation Commission'' was created.⁵ In a later work we will discuss the subject thoroughly from all phases of the question.⁶

§ 60. The perpetuation of our forests—What is being done by the States.—It was estimated by the United States Geological Survey that, on July 1, 1908, the various States of the Union owned, in forest reserves set aside by them, 2,582,711 acres. There are forest laws found in the statutes of each State, of greater or lesser importance. State legislation in this country has followed four somewhat distinct lines, as follows: First, protection of forests against trespass; second, special statutes for protection against forest fires; third, the promotion of forests by various means; and, fourth, the establishment of State forests, and forest organizations charged with the entire care and control of such forests.¹

Since the recent movement for the conservation of all natural resources, a number of the States have taken the matter up and have enacted laws for the protection and maintenance of their forests as complete, and in a number of instances far superior, to those of the National Government. Time and space forbid our discussion of these laws in this work, but they will be fully discussed by us later.² The general tendency of these laws has been for good, and for the protection not only of the timber supply, but also for the regulation of stream flow.

§ 61. The perpetuation of our forests—What has been done by municipalities.—Very many of the cities and other municipalities throughout the country have acquired, by purchase or condemnation, forest lands, particularly upon the watersheds of the streams from which they obtain their water supply for the use of such municipalities and their inhabitants. These lands were acquired primarily to secure a permanent water supply, and to protect the

⁵ For the provisions of the Act of March 11, 1911, see *Disposal of Lands—Reservations*, Sec. 422.

⁶ See Kinney on Forests, Forestry, and Forest Laws.

¹ What the States Should Do to Perpetuate the Forests, by Filibert Roth of the University of Michigan, Vol. 7—Vol. I—Kin. on Irr.

2, pp. 725-747, Report National Conservation Commission, 1909.

Reports as to what each State is doing in the forestry line may usually be had by addressing the Secretary of each State.

² See Kinney on Forests, Forestry, and Forest Laws.

same from pollution. And, for this purpose, a complete forestry system has been devised, and the forests managed and controlled by municipal officers. ¹

§ 62. **The perpetuation of our forests—What has been done by the individual.**—In round numbers, three-fourths of the growing timber in the United States is either upon private lands, or upon public lands, either of the United States or of the States, which are subject to entry or purchase.¹ It was estimated by the United States Geological Survey that on July 1, 1908, there were in this condition 541,334,533 acres, or over three times as great an area as is held by the National Government and the States combined. These lands have been broadly classified into three classes, as follows: First, those who purchase their lands for speculation and hold for a rise in stumpage prices; second, those who hold for game or pleasure preserve and not for profit; and, third, those who hold either to supply their mill, to furnish logs for market, or to furnish fuel, posts, and other timber either for home use or for sale. ²

It is evident, that no matter what measures are taken by the Federal Government and by the States to protect and properly manage their forests, unless the great area which is held by individuals and companies is properly cared for, the great proportion of the existing forests in this country are liable to be destroyed in the near future. Right here is where the great danger lies. The individual, although owning the great proportion of our forest lands, has done less than either the Federal Government or the States toward their protection. Some of the great lumber and railway companies, however, have adopted a system of cutting only the ripe timber upon their lands, and of protecting the young trees as far as possible both from fire and from injury in cutting. By this means it is estimated that their land may be cut over once in about every twenty years, and thus they will have a perpetual timber supply. And, by the protection of these forests, the stream flow will also be protected. This system will

¹ See Kinney on Forests, Forestry, and Forest Laws.

¹ See Sec. 41.

² Methods Which Should Be Adopted by Private Owners to Insure the Per-

petuation of Our Timber Supply, by C. S. Chapman, Vol. 2, pp. 711-724, Report National Conservation Commission, 1909.

undoubtedly be extended as it is better understood, and the forest lands become more scarce and harder to acquire. But this rule is only applied by those who have large holdings of sufficient forest land, so as to enable them to work over the same once in about every twenty years. The great mass of these private lands are owned in small holdings, and by those who are waiting for a good market for their timber. And, when they find this, it is for sale, and that, too, regardless of the destruction from fires or the injury to the young trees. This destructive cutting is especially true where the timber only is bought by companies. It is then cut and slashed regardless of all waste, fire, or the protection of the young growth. And, oftentimes, after such a cutting, the owner of the fee burns over the land, and turns it into other uses than that of growing timber.

There is another element, to which we will barely refer in this connection and save for future discussion, which is a great obstacle to the suppression of the reckless destruction of private forests, and that is the "personal liberty" element. It is generally conceded that the forest laws of this country as compared with those of Continental Europe are very defective in this respect. Here, it has been generally thought, that a man who owns a timber tract may do what he pleases with it. He may carefully preserve it; he may cut it over in accordance with the best scientific methods for the preservation of a perpetual timber supply; or, he may cut off the timber and burn it, and also burn over the land upon which it formerly grew; and, as long as he does not interfere with the property of his near neighbors, he can not be restrained from so doing. In Continental Europe, the interests of the State and communities are always safeguarded in these operations. In this country only recently has it dawned upon the people that the State and Nation have also an interest in the preservation of our remaining timber lands, even if they are owned by the individual. The reckless and useless cutting and destroying of the forest lands of this country by the individual owner, is a positive injury not only to that individual but also to the State. Not only does it uselessly deplete our timber supply, but also it results in many other injuries, discussed in the previous sections of this chapter, among which the most important question is the perpetuation and regulation of the flow of the waters in our streams and rivers.

PART II.

ANCIENT AND MODERN IRRIGATION.

CHAPTER 3.

THE HISTORY OF IRRIGATION.

- § 63. The first knowledge of the science.
- § 64. Civilization and irrigation.
- § 65. Ancient irrigation of biblical times.
- § 66. Ancient irrigation in Egypt as described by early historians.
- § 67. Ancient irrigation in Egypt as described by the writings of Plato.
- § 68. Ancient irrigation in Egypt as described by recent research.
- § 69. Ancient irrigation in China.
- § 70. Ancient irrigation in India.
- § 71. Other nations learned the science from Egypt.
- § 72. Ancient irrigation in Assyria.
- § 73. Ancient irrigation in Phoenicia.
- § 74. Ancient irrigation in Greece.
- § 75. Ancient irrigation by the Romans.
- § 76. Ancient irrigation in Spain.
- § 77. Ancient irrigation in the New World.
- § 78. Ancient irrigation in Peru.
- § 79. Ancient irrigation in Mexico.
- § 80. Ancient irrigation by the Nahua nations.
- § 81. Nahua nations—Arizona—Casa Grande.
- § 82. Nahua nations—Mesa Canal.
- § 83. Nahua nations (continued)—New Mexico.
- § 84. Nahua nations (continued)—Workings in other parts.
- § 85. A court opinion upon the history of irrigation.
- § 86. The skill and durability with which some of the ancient works were constructed.
- § 87. Ancient irrigation—A lost science revived.

§ 63. The first knowledge of the science.—That irrigation is a very ancient science, and that it was practiced by the earlier nations of the earth upon a most magnificent scale there can be no possible question. It is said in the book of Genesis that: “A

river went out of Eden to water the garden.”¹ This has been interpreted by some to be the beginning of irrigation. But whether it was or not, certain it is that it was known and practiced many thousand years before the Christian era. Historians and archaeologists differ considerably as to where the science was first practiced. Some writers have placed its beginning in China, some in India, and some in Armenia; others have placed its first inception along the shores of the Mediterranean; and yet others upon the lost Island of the Atlantis. Again, coming to the New World, still others have traced early workings along these lines to the Nahua nations, which include the Toltecs and Aztecs in Central America, Mexico, New Mexico, and Arizona.²

In the great valley of Mesopotamia, where written history begins, were located the wonderful cities of Babylon and Nineveh, surrounded by a most perfect system of irrigation canals.³ But, owing to the numerous inscriptions on monuments and ancient temples, and the sarcophagi, potsherds, and papyrus rolls, which have been discovered in the ages past and translated by archaeologists, modern research has been enabled to carry the clear and consecutive history of Egypt further back than that of any other country. Therefore, Egypt is generally considered the birthplace of irrigation. But the exact date has never been fixed upon, and probably never will be. And, as long as the leading Egyptologists disagree upon the question of dates by more than a thousand years, it is vain to attempt to fix the exact date of the origin of regulated irrigation, in that or any other country.⁴ But certain it is that at least 2,000 years before Christ, irrigation was practiced extensively not only in Egypt, but in a number of other countries of the Old World.⁵

¹ Genesis, Chap. 2, Verse 10.

² For Ancient Irrigation in America, see Secs. 77-85.

³ See Secs. 71, 72.

⁴ For Ancient Irrigation in Egypt, see Secs. 65-68.

⁵ For those who desire to study the ancient history of irrigation, we refer them to the work of Professor F. H. King of the University of Wisconsin on Irrigation and Drainage; *The Earth as Modified by Human Action*,

Marsh, subject, Irrigation; Irrigation Farming, by Lucius M. Wilcox, 1910, Chap. 1, pp. 1-12; Article in the Edinburgh Encyclopedia, subject, Irrigation; Article in the Encyclopedia Britannica, both the 9th and 11th Editions, subject, Irrigation; Pumping Water for Irrigation, by Herbert M. Wilson, 1896, Water-Supply and Irrigation Paper No. 1, U. S. Geol. Survey.

In the following chapter, some of the traditions and facts stated by history and writers upon the subject of ancient irrigation in various countries will be briefly given.⁶ And in the remaining chapters of this part we will relate something as to what is now being done in the way of the cultivation of lands by irrigation; first, in foreign countries, and afterwards in our own country.⁷

§ 64. Civilization and irrigation.—The coincidence of a high state of civilization with the practice of irrigation is not, in any sense, accidental. It has required the best thought of the best minds of either ancient or modern times to evolve and perfect the science; and improvements even now are constantly being made, both in the methods of diverting, storing, and conducting the water, and its actual application to the soil in the most economical manner for the best results in crop production. To be sure, countries in which irrigation is necessary usually possess dry and warm climates, fertile soils, and under the influence of which, a more satisfactory system of agriculture is made possible, and more certain as to its results, than can be developed in countries which depend entirely upon the rainfall. But this has always been the result of the ingenuity and engineering skill of man.¹ In the days of the ancients, the science of irrigation was undoubtedly developed to the highest degree commensurate with the best knowledge of those days; and also, the principles concerning the actual planting and tilling of the soil were no better understood, than were those relating to the application of water to soils for the production of crops. So history, both in ancient and modern times, show that it was not merely due to the accidents of a country having a good soil, a good climate, and an ample supply of water, that the highest form of civilization existed, but that the results were rather due to that civilization itself, rather than to Nature. The Nile at an early day undoubtedly overflowed its bottom lands, and by the wetting of the ground to a considerable depth afforded by natural irrigation the means to raise crops sufficient to sustain the life of the Fellahin. But it is due to the

⁶ See Secs. 65-85.

For Irrigation Methods, see Secs.

⁷ See Chaps. 3-12, Secs. 63-285.

31-37.

¹ For Irrigation and Its Many Methods, see Sec. 30.

ingenuity and engineering skill of man, under British rule, that it has been possible to harness and store the waters of the Nile, and to direct them to the best results.²

§ 65. Ancient irrigation of biblical times.—Irrigation is referred to in many places in the Old Testament. At the time that Moses appeared to lead the Children of Israel out of bondage from Egypt, it is certain that it was known and practiced in that country. And, as one of the inducements for their continuing their journey, it was promised them in the following language: "For the land, whither thou goest in to possess it, is not as the land of Egypt, from whence ye came out, where thou sowest thy seed, and wateredst it with thy foot, as a garden of herbs. But the land whither ye go to possess it, is a land of hills and valleys, and drinketh of the rain of heaven."¹ The watering of the land with the foot undoubtedly referred to some appliance for lifting the water from a stream or well to pour it into the ditches, and a similar contrivance worked by the Fellahin can be found in some parts of Egypt today.² It is evident that Moses did not think much of this method of cultivating the land.³

In Ecclesiastes we read: "I made me great works; I builded me houses; I planted me vineyards: I made me gardens and orchards, and I planted trees in them of all kinds of fruits: I made me pools of water, to water therewith the wood that bringeth forth the trees."⁴ We also read of the hidden springs and sealed fountains of Solomon, from which the water was led to the plains below. The remains of reservoirs are found in the neighborhood of Hebron, which, according to recent archaeologists, the Jews constructed in the days of Solomon to supply the city of Jerusalem.

§ 66. Ancient irrigation in Egypt as described by early historians.—One of the oldest monuments at Thebes has a representation of a fellah drawing water with a shadoof, in the same method

² For the Effect of Irrigation Upon the Individual, see Sec. 9.

¹ Deuteronomy, Chap. 11, Verses 10, 11.

² For Irrigation and Its Many Methods, see Sec. 30.

³ For Ancient Irrigation in Egypt, see Secs. 66-68.

For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

⁴ Ecclesiastes, Chap. 2, Verses 4-6.

that it is done today. And certain it is that today there are lands which have been cultivated by irrigation for the last 4,000 years, with no signs of wearing out. The muddy water of the Nile applied to the land keeps it fertilized and prevents it from wearing out.¹

The first reservoir or artificial lake in Egypt of which there is authentic record was constructed, so it is claimed, in 2084 B. C., and was supposed to have been built for the purpose of regulating the floods of the Nile. Professor F. H. King of the University of Wisconsin has devoted considerable time to the study of ancient and modern irrigation, and in his work on "Irrigation and Drainage," relative to this first reservoir called Lake Moeris, says: "When the river rose to a height of twenty-four feet, and was likely to be disastrous to crops, the sluices were opened and the river relieved by sending the flood into this lake, which modern travelers give a circumference of fifty miles; but at the times of low water, when drought was threatened, the gates would be opened and the volume of the stream reinforced by the water stored in the reservoir." This reservoir is also described by the historians Herodotus, Diodorus, and Pliny, as one of the noblest works of the time from its great dimensions and its capacity for irrigation.

Sesostris, who reigned in Egypt in 1491 B. C., is said to have had a number of canals cut for the purpose of trade and irrigation, and to have designed the first canal to connect the Red Sea with the Mediterranean, which was continued by Darius but abandoned by him, and ultimately completed under the Ptolomies.²

§ 67. Ancient irrigation in Egypt as described by the writings of Plato.—It is not our intention in this work to go into the history in detail of the art of irrigation in all the ancient countries of the world, but only so far as it is necessary to show that it was known ages before the Christian era, and was practiced in those hot, arid countries upon a colossal scale. Our record of the history of irrigation in ancient Egypt would not be complete without

¹ For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

For Irrigation in Biblical Times, see Sec. 65.

² See Modern Irrigation in Egypt, Secs. 88-102.

giving a sketch of that country as written by Plato, a Grecian who received his information from the writings and sayings of one of his ancestors, Solon, the great law giver of Athens, 600 years before Christ. According to ancient history, Solon visited Egypt and spent ten years there studying the philosophy and early history of that country. Here Plato relates that he learned from the high priest of Sais, at the delta of the Nile, the history and description of Atlantis, and became convinced that the Egyptians constituted one of the earliest and largest colonies which had gone out from the land of the Atlantidae. Now as to the ancient art of irrigation, let us quote from the record that Plato has left us: "And beginning from the sea, they dug a canal 300 feet in width and 100 feet in depth, and 50 stadia in length, which they carried through the outermost zone, making a passage from the sea up to this, which became a harbor, and leaving an opening sufficient to enable the largest vessels to find egress. Moreover, they divided the zones of land which parted the zones of sea, constructing bridges of such width as to leave a passage for a trireme to pass out of one into another, and roofed over them; and there was a way underneath for the ships, for the banks of the zones were raised considerably above the water. . . . In the next place they used fountains both of cold and hot springs. . . . They constructed buildings about them and planted suitable trees; also cisterns, some open to heaven, others roofed over. . . . The water which ran off they carried some to the grove of Poseidon, where were growing all manner of trees of wonderful height and beauty, owing to the excellence of the soil; the remainder was conveyed by aqueducts which passed over the bridges to the outer circles. I will describe the plain, which has been cultivated during many ages, by many generations of kings. It was rectangular, and for the most part, straight and oblong; and what it wanted of the straight line followed the line of the circular ditch. The depth and width and length of this ditch were incredible, and gave the impression that such a work in addition to so many other works, could hardly have been wrought by the hand of man. But I must say what I have heard. It was excavated to the depth of 100 feet, and its width was a stadium everywhere; it was carried around the whole of the plain, and was 10,000 stadia in length. It received the streams which came down from the mountains,

and winding round plains, touching cities at various points, was there let off into the sea. From above likewise, straight canals of 100 feet in width were in the plain, and again let off into the ditch, toward the sea; these canals were at intervals of 100 stadia, and by them brought down wood from the mountains to the city, and conveyed the fruits of the earth in ships, cutting transverse passage from one canal to another, and to the city. Twice in the year they gathered the fruits of the earth, in winter, having the benefits of the rains, and in summer introducing the waters of the canals."

From the foregoing it can be readily seen that irrigation was not only known and practiced at a very early date by the Egyptians, but also was at least known by the Grecians; that the ancient nations constructed underground conduits for bringing water from the heights which they allowed to gush forth at suitable points for irrigating purposes and for domestic use; that they built immense dams, canals, reservoirs, and aqueducts for the same purpose; and that whether the story of Plato of the lost Atlantis and its people is true or not we are sure that, long prior to the time Plato wrote, these stupendous feats had been accomplished and were not then considered beyond the possibility of human skill and engineering.¹

§ 68. Ancient irrigation in Egypt as described by recent research.—In tracing back the history of the most ancient nations, however, we find that what is true as to other countries, is more especially so of Egypt. At the very earliest date to which historians have been able to trace them, their arts and industrial pursuits were as perfect and elaborate, and carried to as high a state of perfection as at the later periods, and almost inestimably higher than the civilization of the degenerate races of people who roam over these same lands today. In Egypt those public works for irrigation which have been decided to be the earliest are on a much greater scale and more perfect in details than the later ones, and as compared with those of today, with the exception of those constructed under recent British rule, may be truly classed, with its ancient civilization and literature, amongst the lost arts of that country. From ancient writings recently discov-

¹ For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

ered, and from recent examinations of the condition of the Nile above Cairo by scientists and explorers, the conclusion has been reached that the six cataracts from Assuan to near Khartoum, in the river Nile, were not, as has been supposed for ages, the work of Nature, but of ancient and scientific engineering for the purposes of both irrigation and navigation—engineering at once bold in its conception and colossal in its execution. That it had also been most successful in its results is evident from the remains of irrigating canals still stretching over many degrees of longitude on both sides of the river, as well as by the ancient records of flourishing cities, where now only barren wastes are to be found, inhabited by roving tribes of Arabs. These canals and these ruins are by no means confined to the valley of the Nile proper, but they reach to the very confines of the Great Desert. Gordon speaks of the ancient irrigation canals as pervading the whole Soudan, as well as what is now desert, on the northern side of the Nile from the Mediterranean to latitude 15 degrees north, if not further, and many degrees of longitude west, as well as east of the Nile Valley proper. Scientists were led to this belief that the cataracts were not the work of Nature by the fact that they were very nearly equidistant from each other along the course of the river. The total distance from the first cataract at Assuan to Khartoum is 720 miles, and the division of this space by six cataracts will give 120 miles between each, which is almost the exact distance between any two cataracts. The fall of the river being eight inches to the mile would give a needed height to each dam of 80 feet, exactly, in short, the calculation which would now be made, primarily, by any irrigation engineer. Last, but not least, the great square granite blocks, composed of a formation that can not be found in any other parts of the Nile except at the cataracts or rapids, stretching out for over 2,000 yards across the river are still visible at very low Nile. From these facts modern scientists and engineers have come to the conclusion that the cataracts or rapids were not the work of Nature, but were enormous dams constructed by man, for the purposes above described. But the proof of the dams having existed where the cataracts or rapids now are does not rest simply on the inference of experts upon the appearance of the river. Quite recently there have been found ancient writings which speak of this fact; and

among the various inscriptions found is one found at Sikilis to the effect that the Nile watered vast regions above Semnah, but that the rock gave way, and that ever after the river ceased to water the region above.¹

§ 69. **Ancient irrigation in China.**—China is a rival of Egypt in its claims of the great antiquity of its numerous canals, reservoirs, and other works constructed for the purposes of both irrigation and navigation. Many of these works are still in existence and are used today.

Since the year 2627 B. C.—ten years after the accession to the throne of Hoangti—or 4,538 years ago, the Chinese are known to have irrigated their lands for agricultural purposes. From very ancient times the Chinese have been among the best irrigators in the world, producing the largest yield from a small acreage. Without the larger and surer product, which farming by irrigation has supplied and insured to that country during the past ages, China could not have begun to have fed her teeming millions; and the hive would have swarmed long ere this.

China has numerous canals of ancient origin, some of them of the most stupendous works of the kind ever undertaken. The Grand or Imperial Canal is a work of great magnitude. It was constructed in the seventh century and enlarged in the thirteenth century. It traverses the Great Plain and flows with but the slight current of two and one-half miles per hour for a distance of 700 miles. While built for the purposes of communication its waters are used largely for irrigation and thousands of drains and creeks have been made to connect with it along its route.¹ This canal connects the Hoang-Ho and the Yang-tse-Kiang Rivers; and, while it affords navigation between these points, with its numerous branches it also irrigates an immense territory.

¹ See, also, *Egyptian Irrigation; A Study of Irrigation Methods and Administration in Egypt*, by Clarence T. Johnston, 1903, Bulletin No. 130, Office Experiment Stations, U. S. Dept. of Agriculture; *Reclamation of Alkali Lands in Egypt, as Adapted to Similar Works in the United States*, by Thos. H. Means, 1903, Bulletin No. 21,

Bureau of Soils, U. S. Dept. of Agriculture; *Pumping Water for Irrigation*, by Herbert M. Wilson, 1896, Water-Supply and Irrigation Paper No. 1, U. S. Geological Survey.

For *Modern Irrigation in Egypt*, see Chap. 4, Secs. 88-102.

¹ See *Modern Irrigation in China*, Secs. 168-171.

§ 70. **Ancient irrigation in India.**—India, like Egypt and China, is another country having a dense population, and traces her irrigation works to very ancient times. Great “tanks,” reservoirs, and canals were constructed many centuries before the Christian era. Some of these are in use at the present time.¹

As far as has been discovered, however, the ancient works in India were of nowhere near the magnitude of the ancient systems that existed in other countries, or of the magnitude of the modern systems which have been constructed in that country under British rule.

§ 71. **Other nations learned the science from Egypt.**—It is not the purpose of this work to go into a lengthy discussion of the ancient history of this art, but we will briefly mention a few of the nations which were acquainted with the workings of the application of water, by artificial means, for the purpose of irrigating lands. To Egypt, as has been seen, is attributed the first knowledge and practice of the art of irrigation, and it is claimed by some authorities that it was the annual overflow of the Nile River which gave the inspiration and taught its value to that people. It is more than probable that Egypt, in her turn, taught irrigation to the people of Assyria, Babylonia, Carthage, to the Phoenicians and to the inhabitants of Italy. At any rate, at a later date we find records of these nations having knowledge of and practicing irrigation very extensively. A great many of the ancient writers of those countries speak of the canals and aqueducts. Cato and Calumella, amongst the Romans, speak of the formation and management of watered gardens. The Lombard kings, at a still later date, undoubtedly following the Roman practice, encouraged and extended the system in Italy. From Lombardy it was introduced into France; and the Moors encouraged it in Spain, Sicily, and Algeria. The early history of Persia and China also shows that these nations were acquainted with irrigation at a remote time. In India it was also practiced in very early days and continues in vogue to this day; and the mighty canals and aqueducts of that

¹ See *Irrigation in India*, by Herbert M. Wilson, 1903, Water-Supply and Irrigation Paper No. 87, U. S. Geol. Survey.

See, also, for *Modern Irrigation in India*, Chap. 5, Secs. 103-118.

country are wonders of the world, so far as engineering skill and construction are concerned. In fact, in all those countries where irrigation has been practiced we find it still in operation, though perhaps not so extensively, nor upon so large a scale as it was by the ancients.

§ 72. **Ancient irrigation in Assyria.**—The Assyrians appear to have attained equal skill and renown with the Egyptians, their teachers, in the science of the construction of great works, and the artificial application of water for irrigation. From history, as related by Herodotus and other early historians, we find that from very ancient times they were noted for their skill and ingenuity in developing extended irrigation systems, which converted by the use of water for irrigation the naturally fertile but arid valleys of the Euphrates and Tigris into productive fields. We are also told that the country below Hit, on the Euphrates, and Samarra, on the Tigris, was at one time intersected with numerous canals, one of the most ancient of which was the Nahr Malikah, connecting the Euphrates with the Tigris. The ancient city of Babylon was protected from the floods of the months of June, July, and August by a system of high cemented brick embankments on both banks of the Euphrates, and, to supplement the protection of these, and to store water for irrigation, a large reservoir was excavated 42 miles in circumference and 35 feet deep, into which the whole river might be turned through an artificial canal.

There were five principal canals of the system supplied from the Euphrates, besides several smaller ones; while the Tigris furnished water for two large canals and several small ones. Along the banks of these canals are now found the ruins of numerous towns and cities, which are silent witnesses of the high degree of civilization to which this people attained, and the great antiquity of the work. Some of these canals, with their numerous branches, led the water to broad, irrigated fields, while they carried along the main waterways the commerce of those far distant days; and they stand today as monuments of bold engineering hardly equaled by anything of their kind in modern times.

§ 73. **Ancient irrigation in Phoenicia.**—It is claimed that the Egyptians taught the art of irrigation to the Phoenicians. At any rate when they were at the height of their power, there were many

large canals that were used for supplying water for irrigation. At the time of the invasion of Phœnicia, the Syracusan general, Agathocles, wrote that "the African shore was covered with gardens and large plantations everywhere abounding in canals, by means of which they were plentifully watered." Fifty years later the Romans invaded the Carthaginian domain, and their historian, Polybius, also states that the country was in a high state of cultivation, and that canals were used both to conduct water for irrigating the gardens and plantations and also for commerce. A number of these historic works still remain. There are aqueducts hewed through mountains of solid granite still in use.

§ 74. **Ancient irrigation in Greece.**—The people of ancient Greece were also acquainted with and practiced the art of irrigation to a considerable extent. Great progress was made by this people in handling and conveying water by means of aqueducts and canals over long distances for domestic and irrigation purposes, especially for the watering of gardens. Herodotus tells us that at Patara the Greeks carried an aqueduct across a ravine 200 feet wide and 250 feet deep, by constructing a pipe line by drilling holes through cubic blocks three feet in diameter, fitting these blocks together by joints and laying them in cement and further held secure by means of iron bands. Another tunnel pierced a hill for nearly a mile, and conducted the water by means of an aqueduct for supplying the city of Samos. In fact today there are many ruined aqueducts scattered throughout the country which were originally constructed for the purpose of supplying water to cities and for irrigation. Some portions of these are in use at the present time. To the Greeks is also attributed the invention of the tympanum or Grecian water wheel. This is a device something on the order of our modern current water wheels, and also operated by the current of the stream.¹ Wheels upon this model have also been constructed in this country.

§ 75. **Ancient irrigation by the Romans.**—The Romans were another people who learned the art of irrigation from the Egypt-

¹ For a cut of a tympanum, see *Pumping Water for Irrigation*, by Herbert M. Wilson, 1896, Water-Supply and Irrigation Paper No. 1, U. S. Dept. of Interior, p. 40, plate 7.

tians, and laid the foundation for that mighty system of canals and aqueducts which we find in Italy today. Rome was supplied in Nero's time by nine separate aqueducts aggregating in length about 300 miles, and which delivered daily 173,000,000 gallons of water, which was later increased to 312,000,000 gallons. This water was used both for domestic purposes and for irrigating gardens of the villas of the Roman noblemen. One conduit, the Aqua Martia, was 40 miles long and 16 feet in diameter. The Aqua Claudia was 47 miles in length. A number of aqueducts are still used and are in good condition. "The golden house of Nero is a mass of ruins, but the Aqua Claudia still pours into the city of Rome its limpid stream."¹

When Caesar invaded Great Britain, in his efforts to conquer the world, many miles of artificial water courses were constructed by his soldiers and the people there whom he had conquered. These canals can be readily traced at the present time, and some of which have been used in recent years.

Again, when Constantine was sent to the Bosphorus, and founded the great city which still bears his name, he caused to be constructed many permanent aqueducts and canals for the purpose of irrigation. A number of these works are used at the present day.

The first irrigation in France was also introduced by the Romans. Great systems of water works were also constructed for a number of cities of that country by the Romans at the time of their invasion. At the time of Augustus, 19 B. C., the Nismes conduit was constructed, which delivered 14,000,000 gallons per day.²

§ 76. Ancient irrigation in Spain.—Many of the irrigation works of Spain are very old, such as, for example, those of the plains of Taragona, date from the time of the Romans, and many others date from the Moorish period. In Valencia and Catalonia the water so used came from swift mountain streams, whence it was conveyed by long canals or acequias along the mountain sides

¹ Quotation from an unknown author from an article published in the *Edinburgh Review*. For the whole quotation, see Sec. 86.

²—Vol. I—Kin. on Irr.

For the endurance of these ancient works, see Sec. 86.

² See Modern Irrigation in Italy, Secs. 144-159.

where it was to be used. Some large storage reservoirs called pantanos were also constructed, feeding a dense network of canals distributed over broad plains. These ancient works are still in operation today, and the water is conveyed upon the lands by the same methods used in those early days. In many places the method of conveyance is small buckets, after the ancient Egyptian fashion.¹

In the regulation of agriculture and the irrigation of lands, no nation of ancient times ever possessed more just and beneficent laws than the agrarian edicts of the Spanish-Arabs, or Moors. Evidence of this still exists in portions of Spain, especially in Valencia, where, when the Moors were driven out, King Jayme, who was wise enough to appreciate their great skill and progress in the art of irrigation, decreed that "water should be taken and used in the order that was established of old, and was customary in the times of the Saracens." Also in Granada, Ferdinand and Isabella recognized that it was good policy to preserve the admirable systems of irrigation established by their enemies, and those who consented to change their faith were guaranteed protection in the enjoyment of their estates and irrigation rights and customs, some of which are embraced in the present irrigation codes of Granada.²

§ 77. Ancient irrigation in the New World.—Respecting irrigation in America, the artificial watering of the soil to increase its fruitfulness is of origin so remote that its history is quite unknown, and is therefore truly prehistoric. At a period probably antedating the Christian era, the inhabitants of certain portions of the Western Hemisphere had adopted a scientific system of using the waters of the natural streams and lakes for this purpose. In Peru,¹ Central America,² Mexico,³ Arizona,⁴ New Mexico,⁵ and in other States of our Southwest, are to be found today numerous remains of skillfully constructed canals, which tend to

¹ See Modern Irrigation in Spain, Sec. 162.

² Walton's Civil Law in Spain and Spanish-America, 1900, p. 63.

¹ For Ancient Irrigation in Peru, see Sec. 78.

² See Sec. 80.

³ For Ancient Irrigation in Mexico, see Sec. 79.

⁴ For Ancient Irrigation in Arizona, see Secs. 80-82.

⁵ For Ancient Irrigation in New Mexico, see Sec. 83.

show that the most prosperous of the ancient inhabitants of this continent were those who raised their crops by irrigation. But the art is a lost one, if we are to judge by a comparison of the irrigation works of the Indian tribes of those countries today with those of the past ages. Philologists and archaeologists think and claim that no conceivable simple case of deterioration of the races could have taken place which would have effected such a change as is apparent. They think the ancient peoples of the country became extinct, and that the present inhabitants are in no sense descendants of the former occupants of the land, but rather that they represent a later migration from another country. The study of the works of irrigation would confirm this theory. It is impossible to suppose that the present native inhabitants of Peru and Bolivia, practicing irrigation as they do today, in the crudest conceivable manner, could have sprung from a race which was at one time master of the art, by whom aqueducts, canals, and reservoirs were constructed on an immense scale, and in such an enduring manner that they have defied the changes of many centuries. When or by whom they were built can not be definitely ascertained, but there is ample proof that the people who planned and maintained them were in many ways highly civilized.

§ 78. Ancient irrigation in Peru.—The Peru of today is a small part of an ancient empire. At the time of the conquest, the Spaniards found the land in a high state of cultivation. While naturally in large part a desert, owing to a very scant or no rainfall between the mountains and the coast, the Incas had brought water immense distances and rendered arable vast stretches of country. The ancient irrigation of Peru was very wonderful.

Prescott, in his "Conquest of Peru," remarks: "Canals and aqueducts were seen crossing the lowlands in all directions, and spreading over the country like a vast network, diffusing fertility and beauty around them."

And again, Prescott, speaking of the use of water for irrigation, says: "Water was conveyed by means of canals and subterraneous aqueducts executed on a noble scale. They consisted of large slabs of freestone nicely fitted together without cement, and discharged a volume of water sufficient, by means of lateral ducts or sluices, to moisten the lands in the lower levels through which

they passed. Some of these aqueducts were of great length. One that traversed the district of Condesuyos, measured between four and five hundred miles. They brought water from some lake or natural reservoir in the heart of the mountains, and were fed at intervals by other basins which lay in their route along the slopes of the Sierra. In their descent a passage was sometimes opened through rocks, and this without the aid of iron tools; impracticable mountains were to be tunned, rivers and marshes to be crossed—in short, the same obstacles were to be encountered as in their construction of their mighty roads.”

That the ancient people of Peru understood the danger of floods and took steps to prevent them is shown by some of the works still extant. Notable is the still visible tunnel near Casmasca. While the waters of the lake were used for irrigation, the heavy rains and melting snows of the mountains would cause an overflow. To protect the irrigation works and settlements along the route, a tunnel was excavated in the mountains to give an outlet, in another direction, to the waters of the lake when they rose to a height to threaten inundation. At the coming of the Spaniards the land everywhere teemed with evidence of agricultural wealth. Today the greater part of the land has reverted to its original arid condition, except where by modern works it has been again reclaimed.

The most of these works of the Incas have been allowed by their Spanish conquerors to go to decay. In some spots the waters are still left to flow in their silent channels, whose windings and sources have been alike unexplored. Others, though partially dilapidated and closed with rubbish and rank vegetation, still betray their course by occasional patches of fertility. Such are the remains in the valley of the Narca, a fruitful spot lying between long tracts of desert, where the ancient water courses of the Incas, measuring four or five inches in depth by three feet in width, and formed by long blocks of granite, uncemented, are conducted from an unknown distance.

§ 79. Ancient irrigation in Mexico.—Without question, irrigation was practiced within the limits of the territory of what is now Mexico, during the early part of the Christian era. The early races, by whose efforts the earliest irrigation works were con-

structed, are as mythical as the "Little' People in Green." Faint traces of their deeds and past glories still remain to make Mexico a land of interest to the antiquarian. Definite traces are still left in the country by that ancient people, by way of conduits and canals, running through portions of the land which are now desert and arid, and which tend to show that at some early date, that very land was cultivated to a high degree, and supported a large population. The result of the work of archaeologists tends to place the termination of this era at from 500 to 700 A. D. Evidences of their works, buildings, temples, and canals attracted the attention of the early Spaniards, and have ever since furnished subjects of interest to the archaeologists. The first race of which so little is known was followed in time by the Aztecs, one tribe of the Nahua nation, who were still a powerful people when the Spaniards first set foot in the land in 1591. The Aztecs also, in turn, cultivated the land by irrigation. And then a new era began with the coming of the Spanish conquistadores, who, for the glory of God, and incidentally the accumulation of gold, spread over the semi-civilized countries of the Western Hemisphere, as well as the savage ones, wherever there was gold, either in the mines or accumulated by trade. In a very short course of exchange, the Indians received from the pious padres a sufficient supply of religion, as an equivalent for the gold that might be had by enforced mining and the virtual seizure of all hoards. To accomplish this and continue the beneficent work, agricultural operations were necessary for subsistence; and as a portion of the land was arid, and required the assistance of irrigation in order to raise crops, we find the spread of irrigation by the Spaniards coincident, in the main, with the extent of mining and other allied industries.

§ 80. **Ancient irrigation by the Nahua nations.**—While upon the subject of the prehistoric nations of America, we will refer further to the works of the Nahua nations, especially of those early peoples known as the Aztecs and Toltecs, who formerly lived in Central America, Mexico, New Mexico, and Arizona. The present representatives of this nation or nations are to be found in the Zuni, Moqui, Pueblo, Yaqui, Acoma, Cochita, Isleta, Jemez, Laguna, Nambe, Picuris, and other tribes of Mexico, New Mexico,

and Arizona, and the Chihuahuas and Tequas, and others along the Rio Grande in Texas.

We are told in history, that when Cortes visited Mexico, the nations then living there utilized the waters of the rivers and mountain streams for the purpose of cultivating their crops, and that the network of canals by which the plantations were watered offered to Cortes's army very serious obstructions.¹ Probably the greatest souvenir left by the aboriginal races of North America is to be found in the maze of prehistoric canals found in the Salt River and Gila Valleys of Arizona. The age of these canals is entirely unknown, and purely a matter of conjecture. That they were constructed by a race of people who had attained a far higher degree of civilization than the aborigines who inhabit that part of the country goes without saying. There is but one tradition among the present Indian tribes concerning these canals, and that relates to their destruction. When Coronado, in 1542, was seeking, to the north of what is now Mexico, the seven cities of Cibola, he found several tribes of aborigines in what is now Arizona, supporting themselves wholly or in part by tilling the soil. These tribes themselves occupied but a limited area, but widely scattered groups of ruins prove that in early centuries the principal valleys were inhabited by a numerous people who had lived chiefly by agriculture, and today in many districts their irrigating canals are still to be seen. Coronado was astonished by the extent and size of these canals, but failed to learn aught of their age or builders, except a tradition of the hasty flight of that prehistoric people and the destruction of their works.² Whether the traditions, as related to the Spaniards under Coronado by the aborigines, and which have been handed down to the present time from both Spanish and native sources, is true as to the actual history of these canals and irrigation works, or whether it is a creation of a later day, it is hard to determine. But oftentimes what is considered to be mythology and tradition in one age is proved in the next to be fact. It is certainly true

¹ 2 H. H. Bancroft's History, p. 349.

² H. H. Bancroft's History, Vol. 17, p. 539; Garces Diano in Doc. His., Mex. Series, 2 Tom. 1, pp. 235-237;

"We were at once impressed with the

beauty, order, and disposition of the arrangements for irrigating."—Emory in Fremont and Emory's Notes of Travel, pp. 47, 48; 1 *Irrigation Age*, p. 26.

that the tradition of the natives is corroborated to a great extent by still existing evidences. The ruins of these canals are plainly visible in the Gila and Salt River Valleys, running across to the Colorado River and into the States of Colorado and Utah. Everywhere are to be found the traces of an ancient civilization of a high order, evidences of hasty flight, as well as the ravages of fire—the salient features of war and pillage.

§ 81. **Nahua nations—Arizona—Casa Grande.**—In the heart of the Southwest, a region formerly forsaken by whites and little frequented by Indians, lie the traces of an ancient city buried by desert sands. In the Gila Valley, Arizona, this lone ruin, christened the Casa Grande by the Spaniards, has, since October, 1906, been the object of investigations, under a special appropriation of Congress, by the archaeological expedition of the Smithsonian Institute. The ruin has been brought three times to the attention of our National legislative body. It lies upon public lands and is therefore under National control, and several appropriations have been made by Congress for its preservation and excavation. As provided by the terms of the appropriation, made to cover the period ending June 30, 1908, the work was placed under the supervision of the Smithsonian Institute, and Dr. J. Walter Fewkes of the Bureau of American Ethnology was chosen as the most available member of the Smithsonian staff to undertake the excavations. He arrived upon the scene October 24, 1906, and since then has accomplished appreciable results. In regard to this ruin, Dr. Fewkes says: "The accounts of visitors to this particular town on the banks of the Gila River trickle along the course of time ever since white men landed in this 'new world.' . . . What sort of people were these first Americans who have left only silent evidence of their pre-Columbian life? It is established that they were ancestors of the Indians—that they bore little resemblance either to Asiatics or to Africans. Wherever they came from originally, they must have been Americans for a large total of generations. Closely allied to the Pima tribe of the present day, conservative estimates would place their number well up into the thousands in each city. It has been the pet theory of ethnologists to account for these vast western ruins by a series of many occupations of the same site, marking each return by the

construction of a 'temple' or 'gathering place' or a 'compound,' " as Dr. Fewkes has termed these large blocks of buildings. One relic, at least, he says, speaks of a vast population in words that are clear—the network of irrigation ditches constructed from the Gila and the Salt Rivers; dug, as they must have been, with crude stone implements, the dirt then laboriously carried away in baskets strung across the backs of women. Imagination will conjure up the number of workers necessary to complete in this manner a ditch found traceable, at least calculation, for thirty-eight miles.

§ 82. **Nahua nations—Mesa Canal.**—In Arizona are to be found remains of prehistoric canals which with their laterals must exceed a thousand miles in length, and the ruins of many of them give evidence of the expenditure of vast labor in their construction. One of the largest of these canals took the water from the south side of the Salt River, about twenty-five miles from the present city of Phoenix, and after leaving the river ran for several miles through a formation of hard volcanic rock. Thus, without explosives of any kind, and with the simple tools of the stone age, the aboriginal constructors of the ditch excavated a canal through solid rock of the hardest formation to a depth varying from twenty to thirty feet, and to a width of about twenty feet, and having a capacity of from ten thousand to fifteen thousand miner's inches when the river was at its ordinary stages. The evidence of the vast amount of labor expended in its construction by the chipping process is plain upon the face of the rock itself, while for miles on both sides of the canal can be found vast numbers of worn out stone axes and hammers. A party of Mormons have succeeded in clearing away the accumulated debris and restoring this ancient ditch to its original usefulness, and have thereby again converted a barren waste into fertile fields, now occupied by twenty thousand people. The canal is at present known as the Mesa Canal, and supplies Mesa City and vicinity with water for irrigating and other purposes. Two miles east of the above-mentioned canal, but on the other side of the river, is the head of the great Arizona Canal, one of the largest in the Southwest, if not on the Pacific Coast, carrying as it does nearly fifty thousand inches of water. Its construction was also suggested by the re-

mains of a prehistoric canal that could be traced for many miles, and the promoter of the new enterprise, in the firm belief that what had been done could be done again under like conditions, had the pleasure of seeing completed a waterway which reclaimed over one hundred thousand acres in and around the city of Phoenix. Forty miles west of the Arizona Canal, and a few miles below the junction of the Salt River, with the Gila on the north bank of the latter river, is the head of another ditch which, from the traces of prehistoric civilization found along its banks, is of even more interest. It is called the "Acequia of the painted rocks," and commences where it can take from the Gila not only the waters of that stream, but also the water of all the canals lying north and east of it as well. Portions of the canal have been reclaimed, but those parts which the hand of modern civilization has not touched are still so distinct that their remains may be traced without difficulty for fifty miles, while between it and the Gila River, in the lands which were formerly irrigated from it, can be found the relics of ancient civilization in profusion, not only in the shape of ruined buildings, but also of pottery, stone implements and weapons, ornaments, etc. But another curious feature of this canal, and the strongest evidence of the great length of time which has elapsed since the ancient system of irrigation was maintained, is that a few miles below the point where it crosses the Hassayamba Creek it traverses a mesa or bench for several miles, from which it falls abruptly into a valley some forty or fifty feet below. Where this fall takes place the waters of the canal have cut away for several feet the walls of the mesa, which are of the hardest volcanic character. As every evidence indicates that the erosion of the rock has been accomplished by the action of the water alone, centuries must have been required for the work. Upon the face of the rock thus cut away are to be found hieroglyphics of every description, of the meaning of which the present aborigines know nothing. From these inscriptions the white man has given them the name of "Painted Rocks."

§ 83. **Nahua nations (continued)—New Mexico**¹—One of the most marvelous engineering accomplishments of ancient or modern times is shown in discoveries which were made during the years

¹ See New Mexico, Part 14.

of 1899 and 1900 in the lava beds of New Mexico. Hundreds of years ago, the geologists and archaeologists tell us, a system of irrigation reservoirs and ditches was operated in this Territory, which is not paralleled by anything of this nature in the United States today. The builders of these works, a people older than the Pueblo race, the native occupants of this section of the country, cultivated thousands of acres of now arid territory. Ditches wound in and out at the base of the mountain ranges, following the sinuosities of the larger canals in such a manner as to catch all the storm water before it was absorbed by the loose sand at the mountain's base. Reservoirs constructed at convenient places stored the water, from which it was led in cemented ditches across loose soil to the various points where it was required for irrigation.

Lava flowed into some of these ditches, once filled with water in the centuries gone by. What can have been the history of this prehistoric race, or what can have caused their disappearance, can, as we have said, be only largely conjectured. Unlike the ancients of other lands, those people have not left a complete record of their glory and their downfall, and whether it was from climatic conditions, or great upheavals, or whether they were supplanted by more warlike and stronger races, is still uncertain; but the weight of archaeological authority tends to the latter belief. That they were highly developed, however, in agriculture, which is the mother of civilization, is shown by the evidences which they have left. Their canals wind in and around for miles, showing a superior engineering knowledge in securing an exact and uniform fall; remarkable viaducts were used in crossing canyons, while a network of distributing ditches brought every available acre into use for tillage. Here was no irrigation by wandering tribes, or individual owners, or diverters of water; but a great system covering large areas, and by a people who were permanently settled in that region, carefully thought out and operated by a central head for the greatest good of the many and the utilization of the greatest possible acreage.

§ 84. **Nahua nations (continued)—Workings in other parts.**—The remains of these ancient people are also found in California, Colorado, Texas, and Utah. Quite extensive systems of irrigating

canals of prehistoric origin are found along the Colorado and Rio Grande Rivers. Many of these have been utilized by modern civilization. It is related by Mr. Wilcox,¹ that: "Thirty-five years ago an engineer at field work, near Riverside, California, was running the level for a proposed ditch. He could not establish the grade satisfactorily, so he went again to the stream and reconnoitered for a new start. He was surprised to find an old acequia—so old, in fact, that its banks were scarcely discernible—and by carefully following its course he was still more astonished to discover that it brought him to his original objective point, and on these lines the new canal was laid. The grade was all that could have been wished for." This is not the only incident of this nature, but others have had practically the same experience.

§ 85. A court opinion upon the history of irrigation.—Mr. Justice Barnes, in rendering the decision of the Supreme Court of Arizona, in the case of *Clough v. Wing*, in the year 1888, went into the history of the subject, and in the course of his very able opinion, said: "The right to appropriate and use water for irrigation has been recognized longer than history, and since earlier than tradition. Evidences of it are to be found all over Arizona and New Mexico in the ancient canals of a prehistoric people, who once composed a dense and highly civilized population. These canals are now plainly marked, and some modern canals follow the track and use the work of this forgotten people. The native tribes, the Pimas and Papagoes, and other Pueblo Indians, now, as they for generations have done, appropriate and use the waters of these streams, in husbandry, and sacredly recognize the rights acquired by law and use, and no right of a riparian owner is thought of. The only right in water is found in the right to conduct the same through their canals to their fields, there to use the same in irrigation. The same was found to prevail in Mexico among the Aztecs, the Toltecs, the Yaquis, and other tribes at the time of conquest, and remained undisturbed in the jurisprudence of that country until now. It existed also in Peru, though there the appropriation was by the State, which constructed and maintained the canals for the use of the tillers of the soil. The Spanish conquerors brought the same

¹ *Irrigation Farming*, by Lucius M. Wilcox, 1910, p. 11.

idea with them from Spain, where they prevailed then as now. Eseriche, tit. 'Agua,' Secs. III, IV, and 'Acequia.' 'The Lombard kings, following the Roman practice, encouraged and extended irrigation in Italy. From Lombardy the art extended to France; while the Moors encouraged it in Spain, Sicily, and Algeria.' Ency. Brit., 9th edition. 'Necessity required it in the districts which comprise parts of the south of Spain, Portugal, and Italy, including Sicily and Greece.' Id. 'Ruins of ancient irrigating works are found in Spain.' Id. In Egypt and in some parts of Persia, India, and some parts of China, this form of husbandry has been practiced from time immemorial and still continues. Under the civil law water was 'publici juris,' and by that law the 'first person who chooses to appropriate a natural stream to a useful purpose has title against the owner of the land below, and may deprive him of the benefit of the natural flow of the water.' Per Denman in *Mason v. Hill*.¹ Thus we see that this is the oldest method of skilled husbandry, and probably a large number of the human race have ever depended upon artificial irrigation for their food products. The riparian rights of the common law could not exist under such system; and a higher antiquity, a better reason, and more beneficent results have flowed from the doctrine that all right in water in non-navigable streams must be subservient to its use in tilling the soil."²

§ 86. **The skill and durability with which some of the ancient works were constructed.**—The instances here cited of the use of natural streams and lakes for the purpose of irrigation by the ancients are but a few of the most prominent of those of the old and new worlds. Many of these ancient canals have been utilized for modern husbandry. But the very facility with which they have been thus utilized has been the means of obliterating the opportunities of tracing back their history and that of the people who constructed them. Once an old ditch is repaired or restored, it ceases to be of interest from an antiquarian standpoint, and soon even its prehistoric origin is forgotten. The question often arises, How great was the skill and ingenuity these prehistoric

¹ 5 Barn. & Adol. 1, 2 Nev. & M. 2 Clough v. Wing, 2 Ariz. 371, 17 747, 2 L. J. K. M. N. S. 118, 110 Pac. Rep. 453.
Eng. Reprint 692.

nations possessed in their day? Never has the skill of the best modern engineers been able to improve on the lines of the ruined canals which they left behind them. In the selection of locations at which to take the water from the rivers the prehistoric races have always exhibited the greatest skill and intelligence. It was these ruins left in Arizona that early in the seventies first gave the settlers of the Territory the idea of reclaiming the valleys where now are towns and cities surrounded by a large population of agriculturists. The first canals simply followed the line of the prehistoric ones. How extensive the system of irrigation in the Salt River Valley alone was, may be inferred from the fact that the amount of land practically covered by the canals was over a quarter of a million acres. The population supported must have been very great. And it is estimated that from the amount of ground probably cultivated, and the ruins of houses and remains of fragments of pottery, shell ornaments, and stone implements found everywhere over the lands, the population supported by the ditches would not fall short of 500,000 people—an estimate that the best authorities consider conservative.

In the Old World, the skill and durability with which these ancient works were constructed are even more remarkable. There are in active service today many aqueducts and canals which were constructed before the birth of Christ. Nations and governments have changed from various causes; they have been overturned by war and invasion; but many of these works have been permitted to remain, and, oftentimes, the conquering nation taking up the work where the conquered left off, and completing their construction, keeping them in repair, and thus handed them down to the present generation. And, in this connection, we can do no better than to quote from the Reply Brief¹ of Mr. David C. Beaman, in the famous case of *Kansas v. Colorado*, then pending in the Supreme Court of the United States,² in which he in turn quotes from an unnamed author a pertinent passage of dignified and majestic eloquence, published in the *Edinburgh Review* many

¹ Pp. 38, 39.

Id. 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

² *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. St. Rep. 552;

years ago, which all of our readers will enjoy, and some of them may recognize:

“That although the tomb of Moses is unknown, the traveler of today slakes his thirst at the well of Jacob. The gorgeous palaces of the wisest and wealthiest of monarchs, with their cedar and gold and ivory, and even the great temple of Jerusalem, hallowed by the visible glory of the Deity Himself, are gone; but Solomon’s reservoirs are as perfect as ever. Of the magnificent and costly architecture of the Holy City, not one stone is left upon another, but the pool of Bethesda commands the pilgrim’s reverence at the present day. The columns of Persepolis are moldering into dust, but its cistern and aqueduct remain to challenge our admiration. The golden house of Nero is a mass of ruins, but the Aqua Claudia still pours into the city of Rome its limpid stream. The Temple of the Sun, at Tadmor in the wilderness, has fallen, but its fountain sparkles in the rays of the morning as when thousands of worshipers thronged its lofty colonnades. And if any work of this generation shall rise over the deep ocean of time, we may well believe that it will be neither a palace nor a temple, but some vast aqueduct or reservoir; and if any name shall hereafter flash brightest through the mist of antiquity, it will probably be that of the man who in his day sought the happiness of his fellow men and linked his memory to some such work of national utility or benevolence.”

§ 87. Ancient irrigation—A lost science revived.—The learning of the ancients in the matter of irrigation, has been, in a large degree, lost to us. We know little more concerning the methods of agriculture and irrigation of antiquity than is indicated by the ruins of their magnificent irrigation works. With the loss of the earliest civilization, the art of agriculture was reduced to a practice based upon empirical rules, some of which were good, many of which were bad, and all of which had been formulated without special reference to the laws of Nature. In fact, during many centuries of the earth’s history the condition of the art of agriculture has been such that it has attracted only those who were incapable or unable to follow the more developed and progressive professions or occupations. Nevertheless, the thinkers of all ages have clearly understood that the prosperity and happi-

ness of a nation have their foundation in the agriculture of the country, and that no country can be truly and permanently great which does not practice an intelligent system of soil cultivation, in which some of its best minds are enlisted. Within quite recent years the farmer has been looked down upon as an inferior being, and the tendency has been for the bright young men who were born upon the farm to drift to the city. Within the last few years the question of scientific farming has given that occupation a different aspect, and a more respectable character. Many of the brightest minds of the country, coming even from the city, now follow that occupation; and the time has come in this country that the great land owner is not the only one who can be a farmer, and at the same time command intellectual and social enjoyment.¹

In the following chapters of this Part, we will relate what has been done, and is now being done, in modern times in some of these same countries, and also what is being done in our own country.²

¹ For the Effect of Irrigation Upon the Individual, see Sec. 9.

² See Chaps. 11, 12, Secs. 238-285.

CHAPTER 4.

MODERN IRRIGATION IN EGYPT.

- § 88. Peculiarities of the country.
- § 89. What irrigation means to Egypt.
- § 90. Area irrigated—Perennial and basin irrigation.
- § 91. Operations under the English.
- § 92. Methods of taking and applying the water.
- § 93. Repair and maintenance of ditches and canals—The *corvée*.
- § 94. Irrigation law—In general.
- § 95. Land titles in Egypt.
- § 96. Irrigation laws and regulations—Powers and duties of officers.
- § 97. Irrigation laws—The water and irrigation code of 1894.
- § 98. Regulations for machines for raising water.
- § 99. Irrigation litigation.
- § 100. Criticism of the Egyptian laws.
- § 101. The law of State control in Egypt, as compared with that of this country.
- § 102. The lessons to be derived from the Egyptian system.

§ 88. **Peculiarities of the country.**—In order to understand the subject of irrigation as practiced and applied in our own country, and the best laws and methods of the same, it is necessary to make a somewhat detailed study of the systems and laws of other countries. During recent years, our Government, with a view to itself taking a more active part in the development of the science of irrigation in this country, has sent to a number of the leading countries, where irrigation is practiced, some of our most expert irrigation engineers, for the express purpose of studying the subject at first hand in those countries. Elwood Mead, chief of the irrigation investigations of the Department of Agriculture, was sent to Italy; Herbert M. Wilson of the U. S. Geological Survey, was sent to India; Clarence T. Johnston and Thomas H. Means were sent to Egypt. The results of these investigations, covering as they did every phase of the subject, are of enormous interest to the irrigation engineers, practical irrigators, and those who are interested in the economic and legal sides of the question.

In the following chapters of this Part we will make a brief study of some of the most important features of the science of irriga-

tion of a few of the countries of the Old World, which lead in its practice; and, by way of comparison, we will compare their systems with our own.

Egypt proper extends from Assuan on the south to the Mediterranean Sea on the north, and lies along the River Nile. It has a length of something more than 700 miles. As far as its agricultural possibilities are concerned, it may be divided into three divisions: First, a narrow strip of arable land along the Nile; second, the portion lying within the delta of the river, consisting of a triangle of about 120 miles on the side; and, third, the Fayum, a province lying to the west of the Nile Valley in an oasis of the Libyan Desert. Outside of these divisions, the country, with the exception of a few isolated small oases, is absolutely desert. The Arabian Desert lies to the east, and the great Libyan Desert to the west of the Nile Valley. The climate of the country is arid in the extreme, and the temperature high, which increases as one proceeds south.

The valley of the Nile is very narrow, and between Assuan and Cairo varies from practically nothing to nine miles. The cultivated land is sometimes on one bank and sometimes on the other, and at times on both. At several points the desert touches the Nile on either bank. At a point about sixty miles above Cairo the valley reaches its greatest width of about nine miles, while the delta proper begins some twelve miles below Cairo, and is triangular in width, being nearly 120 miles on each side to the sea. The greater part of the irrigable land lies in the delta, but only about half of the land that is actually farmed is found there. An Egyptian winter compares favorably with a Utah summer. It is strictly a tropical climate, and during the winter months everything appears at its best, the vegetation being more attractive than it appears during the preceding hot months. Over the greater part of the country there is practically no rainfall, and in no part is there sufficient rainfall to produce crops without irrigation. The average precipitation at Alexandria is 8.26 inches. At Port Said it is 3.49 inches; at Cairo, 1.06 inches; in upper Egypt, south of Cairo, there have been no observations on the amount of rainfall taken, so that no exact figures can be given. There is, however, less rainfall than at Cairo. The whole of the water supply for irrigation comes from the Nile, and the

greater portion of this water comes in what is known as high Nile, when the river is in flood, deriving its supply from the heavy rains in the equatorial regions, where it has its source in Lake Victoria Nyanza, a distance of 3,300 miles from the Mediterranean. The high water season of both the Blue Nile and the Atbara, the two principal tributaries of the Nile, begins with July and ends with September. These two streams, rising as they do in the mountains of Abyssinia, furnish a vast supply of muddy water, nearly all of the sediment of which has built up the valley of the river in Egypt and has maintained the fertility of the soil. The thickness of the layer of the Nile mud, which forms the soil of lower Egypt, according to Captain Lyons, the Director-General of the surveys of Egypt, varies from forty to sixty feet. The Nile at Assuan, or the first cataract, where the stream enters Egypt proper, has a normal flow of 100,000 cubic feet per second, varying from a minimum of 7,000 cubic feet to a maximum of 475,000 cubic feet per second. The rise and fall of the river is usually very regular, and upon this regularity and the height of the annual rise depend to a large extent the success or failure of the crops of the country. A very low flood discharges but 210,000 cubic feet per second, and there is then a scarcity of water for irrigation, and consequently a failure of crops; a good flood discharges 350,000 cubic feet per second, while upon the other hand, a dangerously high flood, or one of 450,000 cubic feet per second, causes much damage. This latter condition, however, has been largely obviated by the storage reservoirs recently constructed by the British.

§ 89. **What irrigation means to Egypt.**—Irrigation in Egypt means now, as it always has, the very life of the country.¹ Although it is claimed that the science is not practiced at the present time to the extent that it was in the time of the Pharaohs, yet under British rule, in the more recent years, it is again approaching that extent. Irrigation in modern Egypt involves the security of the Mediterranean and the safety of the Suez Canal. And by this means the whole evil of a nomadic and uncivilized population is being now checked and will eventually be rooted out. The population of the Soudan is not more addicted

¹ For Ancient Irrigation in Egypt, see Secs. 65-68.

to wandering or war than any other of the inhabitants of Africa, but in that hot, dry climate, they are under the fatal necessity of moving in search of food, water, pasture, and shade. When these are permanently obtainable they settle down into civilized pursuits of life, own property, pay taxes, choose rulers, and buy from manufacturers. The ever-advancing boundary of irrigation has always been found in that country to be the boundary of civilization and comfort. The formerly ever-present famine of that region is passing away and the people are gradually becoming more and more contented, and in a few years extensive armies will no longer be required to keep them in order.

§ 90. **Area irrigated—Perennial and basin irrigation.**—There are in Egypt at the present time in the neighborhood of 7,000,000 acres of irrigated land, and about one-third of the irrigable and arable land is still uncultivated. The irrigated area is annually being extended under the modern works constructed by the English. At the time of the Pharaohs a much larger area was under cultivation.¹

At the time of the Arabian conquest, in the seventh century A. D., a large portion of Egypt was devastated, the banks of the old basins were broken, and large areas were flooded with salt water, or left idle. Except for those small areas of land, too high to be reached by the ordinary floods of the Nile, from the time of the ancients down to 1865 A. D., only the basin system of irrigation was used. This method consists of flooding the land to a depth of from three to five feet at the season of high Nile—which occurs about September 1 each year—and of maintaining this depth of water for a period of about six weeks, when the water was drained back into the Nile, and the seed sown, without much

¹ For Ancient Irrigation in Egypt, see Secs. 65-68.

See, also, *Egyptian Irrigation; a Study of Irrigation and Methods and Administration in Egypt*, by Clarence T. Johnston, 1903, Bulletin No. 130, Office Experiment Stations, U. S. Dept. of Agriculture; *Reclamation of Alkali Lands in Egypt, as Adapted to Simi-*

lar Works in the United States, by Thos. H. Means, 1903, Bulletin No. 21, Bureau of Soils, U. S. Dept. of Agriculture; *Pumping Water for Irrigation*, by Herbert M. Wilson, 1896, Water-Supply and Irrigation Paper No. 1, U. S. Geological Survey.

See, also, the *Annual Reports of the Irrigation Department of Egypt*.

plowing or other cultivation, on the surface of the newly deposited mud.

When Napoleon was in Egypt, in 1798 and 1799 A. D., he is said to have expressed the opinion that the time would come when a dam would be placed across the Nile at the point where the river divides into the Rosetta and Damietta branches, so that the water could be turned into either at will, thus doubling the inundation of the river. Mahommed Ali, who became viceroy in 1805 A. D., changed the method of irrigation in Egypt by cutting a number of deep canals, and thus permitting irrigation throughout the year. In 1833 A. D., Linant Pasha proposed to construct across the Nile at its point of division a regulating dam or barrage, which would allow the floods to pass unchecked, but which, by means of gates, would permit the water to be raised at low Nile to a sufficient height to fill canals running at such a level that irrigation could be practiced without pumping. The dam was completed in 1865, but was never entirely efficient until 1895, when the water was raised to the desired level. At the present time all of the land of lower Egypt is supplied with perennial irrigation,² the greater part of the water being taken out of the Nile at this barrage. The great advantage of the perennial irrigation, or where the land can be irrigated at all seasons of the year, and the basin method, which was only practiced at the season of high Nile, or once a year, can readily be seen. Under the basin method but one crop could be raised during any one year, while under the perennial method two and sometimes more crops could be produced. There is still a great deal of land under basin irrigation in upper Egypt, but gradually, under the English management, canals are being constructed and the system of perennial irrigation extended. When all of the dams now under construction are completed practically all of the land in Egypt will be under the improved system.

§ 91. Operations under the English.—The construction of reservoirs is a new departure on the part of the Egyptian Government, and it is only since the English have been in control that any

² Lands along deep canals which always carry water are irrigated throughout the year, hence the terms, "perennially irrigated," "perennial irrigation," etc.

effort has been made in that direction. The water supply afforded by the Nile is such that storage works can be extended almost indefinitely, or until all of the arable land of Egypt is served by perennial irrigation. The Assuan reservoir is only the first step in the construction of storage works. It is the plan of the Government to build a number of storage works at various places on the river similar to the Assuan reservoir. This is true as to both below and above Assuan.

The Assuan dam, which has just been completed, is 70 feet high, 6,400 feet long, 23 feet wide on top, and 82 feet wide on the bottom at the deepest part; it was originally planned to be 100 feet high, but it was found that a dam of this height would cause the submersion of the temples on the island of Philae, and in view of the protests of those interested in the preservation of this ruin, it was decided to reduce the height 30 feet. The depth of water at the dam when the reservoir is full is 65 feet. The estimated capacity of the reservoir is 863,400 acre-feet.

The first cost of the dam was \$9,740,000, which, with interest, is to be paid in sixty semi-annual installments of \$382,845.31 each, the first of which was paid July 1, 1903. This makes the total cost of the dam, including interest, \$22,970,718.60. It is estimated that the water stored in the Assuan reservoir will add annually to the wealth of the country a total of \$11,000,000.

About 370 miles down the river from Assuan, at Assiut, is another dam and reservoir, which was constructed for the purpose of raising the level of the water so that it would flow into large canals supplying water to land on the west side of the river. This dam has a length of 2,646 feet, and a height of 44.5 feet. This dam was constructed at a cost of \$1,986,630. Other dams are also being constructed and are planned at various points along the river.

It is estimated by the engineers that if the reservoir system can be made large enough to maintain a uniform flow in the river throughout the year, it would at all times discharge about 257,230 acre-feet per day, or about 130,000 cubic feet per second. The Nile furnishes 926,000,000 acre-feet annually. Disregarding losses in storage and transit, it is estimated that 27,521,000 acre-feet of water would irrigate all of the agricultural land. This would leave 65,200,000 acre-feet in the river more than is neces-

sary to irrigate all the arable land in Egypt, or, in other words, a hot, dry, tropical country, with three times the amount of water in the river than is needed to irrigate the whole of the arable land in the country.

§ 92. **Methods of taking and applying the water.**—About the only thing that the people of the United States can learn in the matter of irrigation from Egypt is the success of its mighty engineering feats. When we come to taking the water from the canals and actually applying it to the land, and the laws and administration of those laws, we can learn but little. The methods of taking the water from the canals and applying it to the land are due partly to the physical condition of the country, and partly to the natives, who believe that the ancient methods in this regard are as good as the more modern. Owing to the fact that Egypt is almost a flat country, the farmers of that country seldom are able to secure enough fall to permit the delivery of water from the canals to the fields by gravity alone. The grade of the Nile varies from one-half to one-third of a foot per mile. Owing to this slight fall the canals have to be quite large, because in order to gain any elevation their grades must be less than that of the river. Even under the most favorable conditions they can not gain more than a small fraction of a foot per mile. Being unable to deliver the water by gravity, methods of lifting the water from the canals and river are resorted to. Almost every conceivable method is used. There can be found an immense steam pumping plant of the most modern construction operated alongside a "shaduf," or "shadoof,"¹ a "sakiyeh,"² an "Archimedean screw,"³ or a "natali."⁴

1 A crude representation of the well sweep, worked by hand, which lifts the water from one level to another by a bucket. A single shaduf can lift water only five or six feet, but it is the custom to install them in series of three or four, which, together, raise the water from 20 to 30 feet.

2 This form of water lift is, according to the records on some of the temples, of very ancient origin, almost as old, in fact, as the Pyramids

themselves, and can be worked by horses, oxen, cows, buffaloes or camels, going round and round, the big wheel being geared to another at right angles with it, and as many buckets being added as necessary, according to the depth of the water. The labor of one animal is about equal to the needs of an acre of land; a two-animal rig may do for three acres. It is estimated by Johnston that there are

The native Egyptians, or fellahin, have been most unchanging in their customs and habits. They still plow the ground with a wooden plow, or stir it with a hoe, or with an even more primitive wooden implement. They cultivate the growing crops with a hoe and harvest them with a sickle, or pull the stalks from the ground by hand. They still beat the grain out with a flail, or it is trodden and chopped out with rollers carrying disks and drawn by oxen. They do not readily take to either modern machinery or methods, but still follow the customs of their forefathers.

§ 93. Repair and maintenance of ditches and canals—The “corvéé.”—The expense of keeping in repair and cleaning the ditches and canals in Egypt is something that will astonish the average American irrigator. But, in Egypt, these must be borne each year, for otherwise the raising of crops would cease. If the same conditions existed in this country, with our present price of labor, the cost of cultivation by irrigation would be prohibitive.

In Egypt, after each “high Nile,” the ditches and canals must be cleaned, and this requires an enormous amount of labor and expense. The river in flood brings down immense deposits and

probably 50,000 of these crude machines in Egypt.

3 This is a screw inside of a cylinder, turned by two men. This machine is used for short lifts, high lifts being practically impossible on account of the difficulty of supporting a screw of great length. By this means one man can irrigate from one to two acres a day, provided the lift is not over two feet.

4 By this the water is raised by two men, who operate a bucket, to which is attached four cords. These cords are held by the men, and the bucket is alternately filled and emptied with remarkable dexterity. By this means two men can raise about one hundred cubic feet of water per hour, to a height of three to four feet.

See, also, for Irrigation and Its Many Methods, Sec. 30.

See, also, Egyptian Irrigation: a Study of Irrigation Methods and Administration in Egypt, by Clarence T. Johnston, 1903, Bulletin No. 130, Office Experiment Stations, U. S. Dept. of Agriculture; Pumping Water for Irrigation, by Herbert M. Wilson, Water-Supply and Irrigation Paper No. 1, U. S. Geol. Survey.

For the law governing these pumping or lifting machines, see Décret et Règlement concernant les Machines Elevatoires, Avril, 1881, Février, 1894, et Novembre, 1900, Le Caire, Imprimerie Nationale, 1907.

See, also, Loi sur les Dignes et Canaux, 22 Février, 1894, Le Caire, Imprimerie Nationale, 1905.

the canals are filled with mud, which has to be cleaned out before they can be used. It is estimated by Johnston that the cost of cleaning canals in Egypt amounts to nearly \$2,000,000 per year. This is mostly performed by hand, one man being able to remove about one cubic yard per day, and he is paid the sum of 15 cents. Before the English took possession, the canals were cleaned by the "corvée" system, or forced free labor; but this has been done away with, and laborers are now paid as above.¹ At present the corvée system must be considered as an intermediate step between slavery and freedom. Although the fellah is not imposed upon as he was twenty-five years ago, yet he does not enjoy liberty as it is understood in this country. The work of watching the Nile levees during high water is placed upon the inhabitants, and the corvée is still in force to that extent.

¹ The system of forced and unpaid labor known as the corvée has always been an important factor in all kinds of public construction in Egypt. From building the Pyramids to digging the Suez Canal, or the excavation of a small drain, the corvée has been called into service. From the time of Joseph, some 1750 years B. C., to the early part of the nineteenth century the practice was recognized. The government owned the people and everything in it, and everything was worked, not from the standpoint of the benefit to the individual, but for the profit to the government, and incidentally to its rulers. Formerly the corvée was called upon for all kinds of public and private service, but during the latter part of the nineteenth century it was modified. In 1881, the first khedival decree relating to the corvée appeared, and provided:

Articles 1 to 4 of this decree prescribe what works shall be maintained by the corvée.

Article 5 provided that all male inhabitants of the country, of sound

health, between the ages of 15 and 50 years, with the exception of those indicated in the following section, are subject to corvée duty.

Article 6 provided that the following persons are exempt from corvée duty: Teachers, students, persons attached to charitable institutions, shrines, convents, and hospitals; those in the service of the mosques, tombs, etc.; priests, monks, etc.; people having professions or trades who pay professional taxes; also fishermen, boatmen, and watchmen.

Article 7 provided that every person who is subject to corvée duty could redeem himself by furnishing a substitute, or by a payment in cash.

In 1889, the following decree was rendered:

Article 1. The corvée is suppressed throughout Egypt.

Article 2. The guardianship and charge over the dikes and other works, as well as all urgent measures in case of danger owing to the rise of the Nile, shall continue to be carried out at the *expense of the inhabitants*.

§ 94. **Irrigation laws—In general.**—In theory the Government of Egypt is one of the most complicated in the world; in practice it is comparatively simple. The British Minister plenipotentiary and his advisers are the real government. Native Egyptian officers have certain duties, but the English have all the authority. A decree of the Khedive has no weight unless sanctioned by the British Minister; neither can he veto a measure against the advice of that authority. Before a measure can become a law it is prepared in the shape of a decree by one of the seven ministers. The Minister of the Interior is the Prime Minister and president of the council of ministers. Under him are the Minister of Public Works and the ministers of six other departments. All laws are in the shape of decrees, passed by the council of ministers, subject to the approval of the British financial adviser. Egypt has no popular government. No elections are held, hence the public takes little interest in the affairs of the Government. About all the advantages enjoyed by the provinces or cities is that their local councils or assemblies may discuss measures affecting their communities. They can pass no laws relating to the same. The council of ministers considers their recommendations when it meets, and in this way become acquainted with the public needs. After the council of ministers have approved a decree it is transmitted to the Khedive. It makes little difference whether he signs it or not; his power of veto can not be exercised when it conflicts with the advice of the British Minister. The irrigation officials are under the Minister of Public Works and include an inspector general of irrigation, one inspector of irrigation for Upper Egypt and one for Lower Egypt, and an inspector general of reservoirs. These officials are all English, and all but the inspector general of reservoirs have permanent positions, and his will doubtless last until reservoir construction has been completed. In the same rank with these officials stand six heads of the irrigation administration, who are native Egyptians. The head of the technical service is an Egyptian, and this branch is closely allied with the irrigation administration. To him are referred all technical questions relating to the issuance of licenses for pumps and other lifting devices.

The country is divided into provinces. The chief officer of each province is the governor, who is an Egyptian, and, in most

respects, simply a figurehead. It is also divided into irrigation districts called circles, and at the head of each circle is an inspector. The inspectors of the circles have immediate charge of cleaning the canals, building the smaller diversion works, repairing masonry structures, keeping gauge heights on the Nile, and on the canals, and dividing the water among the canals.

Every canal which serves more than two villages is held to be public, and comes directly under the irrigation administration. There is nothing in the law which requires a certain discharge to be supplied in the canal during any part of the year. There is nothing to prevent an irrigation official closing one canal, or all, at his pleasure. When water is turned into the canal the farmer can use as much as he can lift and convey to his land. What he does not need he is free to waste, but having to lift it all from two to twenty feet, very little is wasted. If the canal supplies too much water and floods adjoining land, or if it fails to supply enough to irrigate the farms depending on it, the irrigator has no recourse except to apply for a remission of a part or all of the tax to the Government. This he sometimes gets and sometimes does not. During the seasons of scarcity rotations are enforced, over which the engineer has absolute control. The purpose of the administration is rather to save the more valuable crops than to protect the irrigators uniformly. The object of that is, it insures to the treasury a maximum return through taxation, but seldom affords an impartial and equitable division of the water among the farmers. Being for a period deprived of the water, the fellah who has planted certain crops is the sufferer, and, although his taxes may be remitted, he has no income from his land and must earn his living in some other way.

§ 95. **Land titles in Egypt.**—Mahommed Ali, while not granting permanent titles to agricultural lands, instituted many reforms in that respect. Among these was the distribution of from two and one-half to five or six acres to each person. This was made quite early in his reign; and in 1842 he permitted the holders to dispose of their lands to others as they pleased. At no time, however, did they hold any actual title to the land they farmed. Together with the lack of titles and the weight of taxation, which was made so heavy as to amount to practically confiscation, the

fellahin have been in many cases forced to dispose of their land, and much of this is now included in large estates owned by foreigners of various nationalities. Under Ismail, large tracts were confiscated by the Government, which now owns about one-fifth of all the agricultural land. The Government rents out to the farmers about 96 per cent of the tillable land owned by it. For this there is received by the Government an average of about \$20 per acre in rentals, through a company called the Daira Sanieh, which company has a contract with the Government that stipulates that the land shall bring a fixed price when disposed of. The land sold prior to the year 1905 went largely to the small farmers. In this way a large area has returned again to the fellahin.

While Ismail Pasha inflicted many wrongs upon Egypt, one of his acts has resulted in benefit to the people. He was indirectly responsible for establishing the first titles to farming land in Egypt. He taxed the people to the limit, borrowed money with whatever credit he had, and without credit when this was exhausted. In an attempt to secure ready money he finally issued a decree providing that all persons who paid their taxes six years in advance would be given permanent titles to their lands. Those who could afford to do so took advantage of this offer, and the titles thus obtained have since been recognized. This law, however, was repealed in 1880, because it was not as good a financial measure as it had promised to be.

§ 96. Irrigation laws and regulations—Powers and duties of officers.—When the English engineers first undertook a study of Egyptian irrigation it was found that the laws of Egypt were fragmentary, and it was difficult for them to tell what provisions were in force. As early as 1885, the ministry issued decrees regulating and defining the respective powers of the governors of the provinces and the inspectors of irrigation. These regulations are still in force and are among the first reforms in irrigation law. ¹

1 A free translation of these laws and regulations is as follows:

Section 1. It is the duty of the governor to see that a just distribu-

tion of the water is made in the various districts composing his province. He will make known at an opportune time to the irrigation inspectors ap-

In order to give the inspectors, who were English, the absolute power, their duties in the law quoted below are purposely not

pointed by the minister of public works the places where more water is needed and at what times, and hear the complaints on such subjects as may be addressed to him by the chiefs of the villages.

Sec. 2. It is the duty of the inspectors to satisfy all demands as far as possible, and where they can not for any reason carry out these instructions they shall report the matter to the governor and communicate with the minister of public works. The governor, on his part, shall inform the minister of the interior, and the two ministers shall together take the matter under consideration and, if necessary, report it to the council.

At the beginning of each year the governor, with the agricultural council, shall specify in the ordinary manner the various works which are to be executed.

In order that the governor may be able to undertake this work with full knowledge of the facts, the chief engineer shall report to him his estimates and calculations some days before the meeting of the agricultural council.

The governor shall put himself in direct communication with the chief engineer on all questions which may arise during the course of the year. If he does not obtain satisfaction he may appeal to the inspector, and, if necessary, to the minister of the interior.

Sec. 3. The technical control of the distribution of water, the partial or complete closing of gates, belong *wholly to the inspectors*, and nothing may be done without their *written orders*. Consequently, if the governor believes that it would be better to

partially open or close any gate, he must address the chief engineer, and, if necessary, the inspector, giving his reasons and all possible evidence. The engineer and inspector may be able to approve and act accordingly. If not, they must explain to the governor what facts and evidence the minister of the interior and the minister of public works should have in case the question is appealed to them.

Sec. 4. During high water in the Nile, or whenever to avoid disaster, and when the governor does not have near him an engineer whom he may consult, it is the duty of the governor to do whatever in his judgment may be necessary, whether to throw stones in the water, or to use other means for adding to the security of irrigation works. In such cases the governor should telegraph to the inspector immediately, requesting the aid of the chief engineer.

If the engineer of the province be present, he, and not the governor, directs what measures to adopt, and he is held responsible for the same.

If, however, the governor gives orders contrary to those of the local engineer, the latter must obey, but at the same time give notice that discord exists, after which the governor is responsible for what takes place.

The inspector shall arrange matters so that the governor may be accompanied as often as possible in his journeys along the levees and canals during high water by the chief engineer or some one delegated by him.

Sec. 5. The engineers are under the minister of public works, but they owe the respect due to the principal representative of the government in the province. They should respond to

clearly defined. The governors of the provinces, being Egyptians, have but little authority over the regulation or use of waters. Section 1 provides that: "It is the duty of the governor to see that a just distribution of the water is made in the various districts composing his province." This is followed by a sentence which reduces his authority to the reporting of "the places where more water is needed and at what times, and to hearing the complaints on such subjects as may be addressed to him by the chiefs of the villages." After taking away all of the power of the governor, and giving full power to the engineers and inspectors, the

his demands and give him all the information he may desire. When the governor has reason to believe that the local engineer acts without or beyond the orders of the inspector in that which concerns the making of regulations relative to the use of water, which regulations must be communicated to the governor and published, he must study with care the conduct of the engineer, make full inquiries regarding his acts, as well as the acts of those under his orders, and shall make known to the inspector the result of these inquiries.

Sec. 6 provides: That no new work may be undertaken without the previous sanction of the council of ministers, and how the plans for the proposed work must be submitted.

Sec. 7 provides: That the governor is not called upon for the technical execution of the work; the chief engineer is alone answerable and bears all the responsibility for the completed work. The section also provides for the *corvée*, and how it shall be called out. (This portion has been repealed by decree of 1899.)

Sec. 8. When, for any reason, the inspector desires to close a canal for more than 14 days, he must inform the governor of his intention as soon as possible, so that the latter may present his objections, if he has any.

Sec. 9. *Irrigation works*.—Irrigation works may be divided into two classes. The first class includes those for which bids are advertised in the official journal, which bids are submitted under the prevailing rules of the minister of public works. These works comprise all excavation requiring more than a thousand men per day, all masonry work costing more than £200, and all work in which machinery is necessary.

In work of this class the governor will not be consulted as to the choice of the contractor, but he shall be informed regarding the nature of the contract. During the execution of the work he must, if he deems necessary, call the attention of the engineer to the manner in which the contractor is executing the work.

Sec. 10. The second class covers the excavation and cleaning of small canals, small works where masonry is not needed, and repair of masonry works. Contractors shall submit bids to the governor for work of this class. The inspector shall submit to the governor a copy of the specifications. The bids shall be opened and a contractor chosen to the satisfaction of *both the governor and inspector, or his assistant*. It is not necessary to accept the lowest bid. In work of this class the governor must always

regulations in Sec. 4 contain the somewhat ironic provision: "The engineers are under the ministers of public works, but they owe to the governor the respect due to the principal representative of the Government in the province."

The classification of improvement works provided for in Articles 9 and 10 is worthy of notice. The governor has nothing to do with awarding the larger contracts. The law, however, provides that "he shall be informed regarding the nature of the contract," and "during the execution of the work he must, if he deems necessary, call the attention of the engineer to the manner in which the contractor is executing the work." In the smaller improvement works the governor has greater authority.

This regulation not only prepared the way for the irrigation codes that were to follow, but made it much easier to introduce reform measure regarding the *corvée*. As soon as the contractors on large enterprises were brought directly under the Minister of Public Works, a solution of some of the labor problems could be undertaken. It was supposed at the time that the regulation went into force that the use of machinery would go a long way toward reducing the labor of the *corvée*, but experience has not proved this to be the case, owing to the fact that labor is so very cheap, the labor of a man for one day being worth about 15 cents.

§ 97. Irrigation laws—The water and irrigation code of 1894.—While the needs were evident to the English engineers and officers of the Egyptian Government, owing to the political and other conditions of the country, it was impossible or impracticable to bring about the enactment of better laws governing and controlling the distribution and use of waters until the year 1894, when a fairly comprehensive code was enacted. This code, of course, places the almost absolute control of all the waters and the works used in utilizing them in the various inspectors and other English officials. And, in order to compare the Egyptian law upon the subject with those of our own, we will give a free translation of an abstract of the same, which is as follows: ¹

judge as to the reliability of the bidders. The governor should, if possible, favor local contractors.

1 Loi sur les Dignes et Canaux, decret 22 fevrier 1894, Le Caire, Imprimerie Nationale, 1905.

Public Canals and Levees.

Article 1. The word "canal" refers to a water course which serves for the entire or partial irrigation of more than two villages. All canals of this kind are public property. They are generally constructed and maintained at Government expense and are a part of the public domain.

The use and occupation of banks and canals are permitted only with certain restrictions laid down in Article 21 of this decree.

Private Ditches.

Art. 2. By the word "rigole" is understood a water course which serves for the irrigation of the land of one or two villages, or of land belonging to one person or to a single family living in one community, even if belonging to several villages.

All rigoles are considered private property. The cost of construction and maintenance is borne by those who derive profit from the works.

In case of delay in cleaning these works, the Government may perform the work at the expense of the proprietors. The sum thus spent will be distributed by the governor in proportion to the taxes paid by each, and it will be collected in conformity with the provisions of the decree of March 25, 1880.

However, if a ditch serves for the irrigation of 1,000 acres belonging to one or several persons, it can always, upon request of the owners, be considered a public waterway.

Drains.

Art. 3. The word "drain" indicates a channel in the earth for carrying away rain water, drainage water, or water from irrigated fields.

A drain is public when it serves more than two villages; private, when it serves one or two only, unless it drains a surface of more than 2,000 acres in area, when it is considered a public work, although it may be situated in one village.

The public drains are maintained by the Government and the private drains by the parties interested. The provisions of the second paragraph of the preceding article are applicable to private drains.

Works for Protection Against Inundation.

Art. 4 provides that these works are levees, transverse and longitudinal dikes, and all structures serving to protect farms and villages from the overflow of water. These works are considered public property and wholly under Government control.

Private levees upon the banks of the Nile, or those which form the boundaries of basins and which are constructed by the owners, must be maintained at the expense of those benefited.

Powers of Irrigation Inspectors and Chief Engineers.

Art. 5. Irrigation inspectors are the representatives of the minister of public works and have under them the chief engineer and all of the irrigation administrative service. Their powers and their relations to the governor are fixed by the regulations of December 31, 1885.²

Public Works on Private Lands.

Art. 6. The owner of land crossed by a public ditch, drain, or other work destined to serve the lands of neighbors can not, without the written consent of the owners of the lands served, till the land occupied by such works in such a way as to destroy the usefulness of the works.

Stopping of Water-Raising Machines and Closing of Canals.

Art. 7. No indemnity can be claimed from the Government for loss occasioned by a reduction or stoppage of the flow of water in a canal resulting from extreme necessity or having for its object repairs or changes recognized to be necessary, or by any measure which the irrigation inspector may deem necessary, in order to maintain the volume or regulate the flow of water—such, as for example, the closing of a canal or the suspension of irrigation for a certain number of days on all or part of a canal, so that other places in greater need of water may receive it.

In case it may be necessary to clean or repair a canal the irrigation inspector, through his agent, the chief engineer of the province, shall determine when water may best be dispensed with for irrigation, that those operations may be carried on.

² See note to Sec. 96.

The section also provides that the inspector should act in accord with the governor as required by the decree of December 31, 1885; and that the governor should notify and consult those interested or their legal representatives.

Construction of Private Ditches.

Art. 8. If the citizens of a village desire to construct a canal on their own lands for their own use they shall apply to the governor. He will communicate the application to the inspector of irrigation, accompanying it with his recommendations and advice, and, if the inspector agrees, the governor will approve or reject the application as the circumstances may warrant.

It also provides that the expense shall be borne by the applicants, and that other parties may use the ditch even during low water, after the original applicants shall have received what they need for their lands, in which case such parties become contributors in the cost and maintenance in proportion to the extent to which their lands may be benefited by the ditch.

Ditches Through Lands of Persons Not Benefited.

Art. 9 provides for rights of way through the lands of others, by a land owner whose land will be benefited. He must make application to the governor, who will communicate the same to the inspector of irrigation, with his recommendation and advice. The latter will examine the situation, on the ground, and give his decision, after hearing the parties interested.

If the report is favorable to the applicant and the governor, after having acquainted himself with the facts, agrees with the inspector, a decision to this effect shall be rendered by the inspector. This decision shall be transmitted, as prescribed by law, to the opposing parties. The latter may, within fifteen days from such notice, appeal to the minister of public works, whose decision shall be final. If the governor and inspector of irrigation do not agree, the case shall be submitted to the minister of public works.

Insufficient Supply of Water in a Ditch.

Art. 10. An irrigator who believes that he does not have sufficient water for his purposes, should notify the governor, who should in turn communicate with the inspector of irrigation,

accompanying his report by his recommendation and such information as he may deem necessary, so that the inspector may determine whether or not the ditch which irrigates the cultivated land has sufficient capacity, and as to whether it should be enlarged. The inspector will base his judgment on the extent of irrigated land and the character of the irrigated crops. If the neighboring property holders object to the enlargement of the ditch, as may be recommended by the inspector, the provisions of the preceding article are to be observed, and if the enlargement is for the passage of summer irrigation water, the regulation set forth in Article 9 shall apply.

Exchange of Ditches.

Art. 11 provides for the exchange of ditches, but during low water no exchange of ditches is permitted without the consent of all parties interested.

Construction of Laterals, or Installation of Water-Raising Devices on Canals.

Art. 12 provides that application by the owner of land bordering upon a canal must be made to the governor, who will communicate it, accompanied by his recommendations and advice, to the inspector of irrigation; the latter will refer the matter to the chief engineer of the province, who, in the case of the sakiyeh, if he approves the request, will furnish the necessary authorization, but if it concerns a lateral will return the papers to the inspector for his approval.

In all cases a copy of the authorization shall be transmitted to the governor, together with a statement that the discharge of the canal is sufficient to supply the lateral or the land to be watered by the sakiyeh without injury to those using the water from the same canal below.

The applicant is required to pay all expenses necessary for the flow of the water into the lateral and the maintenance of the banks of the canal in good condition. A permit for water-raising devices must be obtained.

Closing a Ditch to Prevent Injury to Adjacent Lands.

Art. 13 provides how ditches may be closed where injury is done to adjacent lands, if it be shown that the land irrigated by

the ditch can be watered from another without injuring lands or agriculture in any way.

Art. 14 provides for the increasing or diminishing the size of the head gate of a ditch or changing the level of the bottom of the same.

Art. 15 provides how right of way for drains passing through the lands of parties not benefited may be obtained.

Art. 16 provides for the repairing of a ditch or drain so as to prevent damage.

Art. 17 provides for changing the location of a ditch which does not meet the demands of the irrigators under it.

Difficulties Which May Arise in Connection with the Repair of Ditches.

Art. 18. If any party disagrees with his associates as to whether or not a canal should be repaired, and so notifies the governor, the latter shall delegate the chief engineer to make investigation on the ground and ascertain the facts. If it is considered necessary to have the repairs made, the governor will notify the interested parties to do so.

But if the parties are found to be unable to perform the necessary work, either for want of labor or money, the government may defray the expenses necessary for making the repairs and reimburse itself for the money so expended by numerous payments from those benefited, the amounts of such payments to be fixed by the province according to the means of the parties. The Government may renounce all claims for reimbursement if the parties are recognized as being poor.

Art. 19 provides for the civil remedy for the destruction of dikes or filling in of ditches or drains. After the matter has been submitted to him, if it is found that the dikes have been destroyed or channels filled in, the inspector will make an estimate of the cost of re-establishing the works as they formerly stood, and the governor will require, according to law, the offender to restore the property he has damaged. In case he refuses he will be obliged to bear the expense of such repairs.

In case of the interception of the water, if it is found that the complainant actually irrigated his land from the same ditch where the water is intercepted, during the preceding year, the inspector

of irrigation having made an examination, will so inform the governor, who will take such lawful measures as may be necessary in order that the water may flow as formerly, all expenses being borne by the party or parties who intercepted the water.

Art. 20 provides for the removal of trees planted on levees and canal banks, where they are obstacles to the flow of the water, to navigation, or to travel on the banks.

Cultivation of the Banks or Bed of a Canal.

Art. 21. The customary practice of cultivating the sides of canals not reached by the water and the beds of Nili Canals (canals used only during high Nile) will be permitted, but the cultivator of such land can not claim any damage for injury occasioned by necessary repair or cleaning of canals. However, the inspectors will enjoin the agents in charge of the work to take all possible precautions to prevent loss to the growing crops.

A farmer of such government land will not be required to pay rent therefor when the crop shall have been damaged as a result of necessary public work executed before harvest time. He will, however, be obliged to bear the loss of the damaged crops.

Making a Road Along Cultivated Bank.

Art. 22. If it is necessary to use for a public highway the bank of a canal ordinarily cultivated, or if for any reason it is desired to stop cultivation thereon, the inspector of irrigation will request the governor to inform the farmer that cultivation will not be permitted after the crops then growing shall have been harvested. If, in spite of this notification, the farmer persists in using the bank for raising crops he will have no claim against the Government should the crops be destroyed by order of the governor. But if the land along the bank yields revenue through taxation, the Government must remit taxes thereon and declare it a public highway.

Art. 23 provides for the construction or repair of private head gates along the banks of the Nile or of a canal; this must be done at the expense of the owners.

Works for Protection Against Inundation.

Art. 24. When, to protect the country against inundation, it is necessary to occupy a tract of land belonging to individuals,

whether it be cultivated or not, or to destroy a building of any kind situated on said land, the area of the property so occupied will be measured, and the valuation will be fixed by the commission, as provided in Article 27. After having heard the owner and the inspector of irrigation the commission will inform the governor of the estimated damages resulting from these works.

The sum fixed by the commission will be paid by the minister of public works. No appeal can be taken from the decision of the commission.

In case of danger during high Nile, the governor may act immediately. He may occupy land, whether cultivated or not, destroy a house or any other structure in the building of works necessary for protection; in this case the estimate of damages will be made by the governor or his deputy, acting with the chief engineer of the district and four prominent persons, two of whom shall be chosen by the owners of the property and two by the governor. In case of a tie the governor or his deputy shall cast the deciding vote. The damages shall be paid by the minister of public works.

Change in the Course of the Nile.

Art. 25. If the Nile should form, owing to a change in its channel, an island or deposit of alluvial soil near a bank upon which is erected an elevating machine authorized by the Government, and the Government should deem it expedient to sell or rent this island or tract of land, the owner of the machine shall have a right to dig through the alluvial land to bring water to his machine without indemnification to the tenant or owner.

Art. 26 provides that boats will be allowed to load and unload their cargoes upon the banks of the Nile or canals, provided no damage be done.

Board of Appraisers.

Art. 27. A commission is hereby instituted to act where parties fail to agree on the amount of indemnity due, whether it be for lands necessary for the construction of ditches or drains or for any other case of indemnity provided for in this decree.

This commission shall be composed of the governor or his deputy as president, the chief engineer, and two prominent citizens of the province chosen by each of the interested parties.

In case of a tie the president shall cast the deciding vote.

If the chief engineer is absent or hindered from attending, the inspector of irrigation shall appoint the principal deputy engineer to take his place.

Art. 28 provides that the owners of boats can not claim indemnity against the Government for delay occasioned by the closing of a canal or by insufficient water in the canal or in the Nile.

Art. 29 provides for the removing of wrecked or grounded boats and their cargoes; the expense of removing the boat to be borne by the Government, but that the owner can have no claim against the Government for damages.

Art. 30 provides for the establishment of ferries on canals.

Art. 31 prohibits, under penalties, for any one to require or collect any payment whatsoever for the privileges which authorized boats have of loading or unloading their cargoes on the banks of the Nile, of a canal, or of a public drain.

Arts. 32-37 provide for offenses against public and private works and the penalties therefor.

How Offenders Are Tried.

Art. 38. Offenders will be tried before a commission composed of the governor, the chief engineer or his deputy, and three prominent citizens of the province, to be chosen by the minister of the interior.

A majority vote shall decide.

No appeal may taken if the sentence carries a fine only.

Where the offender is condemned to imprisonment, he may appeal to a special committee sitting at the ministry of the interior and composed of the under secretary of state as president, a khedival councilor, and a delegate from the ministry of public works.

The appeal must be lodged by a declaration to the province or to the Government within three days after the decision has been handed down.

The appeal will not be received unless the party condemned has at that time paid the fine imposed, subject to refund in case of acquittal.

Art. 39. Special regulations of the minister of the interior shall fix the procedure to be followed whether before the commission or before the special committee.

Art. 40 provides that the sheiks and watchmen of the towns and villages, the overseers of the government lands, will be held responsible for the safe keeping of the dikes and canals and all works of art which may be located in their respective jurisdictions and which have been consigned to their care. In case of offense they will be held personally liable for the expense of repairing the works should the offenders not be apprehended.

Art. 41 provides for the collection of fines and other expenses.

Art. 42. All previous acts in conflict with this decree are hereby repealed.

§ 98. **Regulations for machines for raising water.**—As nearly all of the water used for irrigation in Egypt has to be raised either from the river or from the canals to a height of from four to twenty-four feet, and many thousands of machines and water-raising devices are used for this purpose, it was found necessary to adopt some sort of regulations governing such machines. Therefore, on March 8, 1881, such a decree was promulgated, an abstract of which, freely translated, is as follows:¹

Art. 1. Any person, before establishing a machine for elevating water either for irrigation or drainage, whether the machine be stationary or movable, or propelled by steam or by a current of water, or by wind, must receive permission from the public works ministry. The permit carries with it no right or title to the public or private lands traversed by pipes, conduits, aqueducts, head gates, or occupied by the pumping plant, in any way whatsoever. The Government remains neutral in all respects in all disputes between the people and the person receiving the permit and leaves to him all responsibility resulting from damages which may occur in the installation of the plant or in any other way.

Art. 2. The erection of stationary elevating machines will be authorized only upon the banks of the Nile. At the same time the minister of public works may make exception and authorize the establishment of such machines upon certain canals. The minister is to be the sole judge of the expediency of issuing a permit, and to him is left all questions regarding all agreements and conditions to which it will be subjected, as the case may demand.

¹ From *Decret et Reglement concernant les Machines Elevatoires*, 8 mars 1881, Le Caire, Imprimerie Nationale, 1907.

Art. 3. Travel along the banks or navigation must not be interfered with by such machines.

Art. 4. In case the applicant fails to comply with the conditions, his permit will be canceled.

Art. 5. The site for such machines can not be changed without a new permit.

Art. 6. The Government retains the right to cause any authorized pumping plant removed. ♦

Art. 7. By the permit, the right to install the machine only is authorized. It carries with it no assurance of a supply of water for the machine. In order to conduct the water over the land of the Government, the applicant must secure a special permit.

Art. 8. The ditches for carrying the water from the machines to the land must be constructed in such a manner and be of such a kind as not to interfere with travel, the flow of water, or with irrigation.

Art. 9. For the general good, in case of low water, the Government may order the immediate closing down of such machines, or reduce the capacity of the same.

Art. 10. Under the provisions of Article 7, the ministry of public works is, under certain conditions, authorized to permit the use of Nili canals for carrying water from the machines to the land to be irrigated, under the following reservations:

(1) Such permission will be given only during the season of low water of the Nile, and ends when the water will flow freely in the canal.

(2) Permission will be given only when the proprietors of the land who use the Nili canal have given their general consent.

(3) If it is found necessary to construct dams to maintain the level along a Nili canal, these must be of earth.

(4) The owner of the machine is alone responsible to the people for all the damage occasioned by the breaking of dams, percolation, and the delay in building the dams at the time the supply of water is available.

Art. 11. Any person who had established a machine prior to the decree might apply for a permit.

Art. 12. After August 31, 1881, the operation of all machines established contrary to the provisions of the decree will be stopped.

Art. 13. The Government reserves the right to exercise, in the interest of the public, a supervision of the working of the machines, without removing from the proprietors the responsibilities which may be incumbent upon them.

Art. 14. Regulations for carrying the decree into effect and for the protection of such interests as are affected thereby will be prepared by the ministry of public works.

By a separate decree of April 6, 1881, the above was supplemented, as follows:

Art. 1. All applications for permits must be made upon stamped paper, and be addressed to the governor, and contain a full description of the machine; the location where it is proposed to establish it; whether it is to be used for irrigation or drainage purposes; the full names, professions, nationalities, and residences of the owners; and the period for which the permit is required.

Art. 2. The application is recorded in the governor's office upon a special register. It receives a number in sequence, after the payment of a fixed fee of 100 piasters (\$4.93) for each machine. It is then transmitted to the chief engineer of the circle.

Art. 3. If the chief engineer approves the project, he draws up in due form and signs the permit, which must contain: The agreement under which the applicant agrees to abide by the present decree and all future laws and regulations; a description of the site upon which the machine is to be erected, and any special features necessary. All facts relative to such machine must be made public, so that objections may be made.

Art. 4. The permit is then sent to the engineer of the circle, to the province, or to the governor, and is signed by the latter and forwarded to the applicant. It becomes effective upon the payment of 50 piasters (\$2.47) per horse-power. This tax, however, shall never be less than 500 piasters (\$24.65).²

§ 99. **Irrigation litigation.**—Owing to the fact that the Government so absolutely controls the water of the country and its diversion and division there is no litigation between irrigators as to water rights. Cases are occasionally brought against the Government because the water supply is short or because the size of

² For applications for the drainage proceeding is had. See decree approved Feb. 21, 1894.
of swamps and marshes, a similar

the pump the engineers have permitted to be installed does not suffice for the irrigation of the lands it was intended to serve. These cases are, however, rare. Such suits, if the amount of money involved is small, go first before the native courts, where, at present, a Government officer is usually looked upon with suspicion. As the irrigation cases in the courts are nearly all small and relate generally to rights of way and similar questions, and as the English have slowly instituted reforms in the court proceedings, just decrees and decisions are now the rule rather than the exception. Disputes are largely left to the engineers, who are enabled to take whatever decisive action is necessary and to institute such reforms, as in their judgment, are plainly necessary. Another question which often leads to a lawsuit against the Government is the remission of taxes on the irrigated land or the reduction of taxes on the lands where the water has to be pumped. The Government taxes on land which has to be irrigated by pumped water are only half as much as where the land is flooded. A suit of this kind is often expensive, and the testimony, as is the case of irrigation cases throughout the United States, is generally quite voluminous. If a native brings a suit, and the area of land involved is small, involving a loss of less than \$500, the case is brought in a native court. If the land belongs to a foreigner, the case goes to the mixed tribunals. If an appeal is taken from the decision of the mixed tribunals, the case goes to the court of appeals at Alexandria.

When Mohammed Ali instituted and undertook the execution of perennial irrigation works in Egypt, he carried on the reform as though he were the proprietor of all the land and water in Egypt. He fixed the rate of taxation, hired engineers to design the irrigation works and superintend the construction of the same. Where labor was needed, by means of the *corvée*, he forced the native farmers, or *fellahin*, to leave their farms, either to excavate or clean the canals, or to work on the numerous irrigation structures connected therewith. The Egyptian farmer has long been used to this kind of treatment. In fact, he has never seen anything else until within the last fifty years, and it will take him a long time to recover, even if the Government makes it possible for him to do so. It is not surprising that a wise irrigation code has not developed in Egypt, when all these conditions are considered. In a

country where, up to quite recently, land titles were unknown, it is not very strange that the rights of an irrigator have not been recognized or protected to any great extent.

§ 100. **Criticism of the Egyptian laws.**—It will be noticed in the law that the inspectors are given almost absolute authority.¹ The authority of the governor, who is a native, is limited to the receiving complaints and referring the same to the inspectors with his recommendation, which may or may not be followed by the inspectors.

Art. 18 provides for repairs of ditches and head gates. It will be noticed that the slightest repairs can not be made without a formal inspection. If the parties are financially unable to make the repairs the Government will do so, at the expense of those interested; or, if the parties are poor, the Government may renounce all claim for reimbursement.

Art. 21 shows how intensely the land of Egypt is cultivated, and allows the cultivation of the beds and banks of the canals, however, at the risk of the farmers.

Articles 32-37, relating to offenses and prescribing the penalties therefor, contain a list of all offenses which had been called to the attention of the engineers, prior to the issuance of the decree. Art. 38, prescribing how offenders shall be tried, is another example of the summary proceedings in criminal cases, provided for in a law enacted and enforced by engineers. This law may be all right for Egypt, where the condition of the farmers is but one step removed from that of slavery, and it is undoubtedly better than the laws which preceded it, but it would not answer in any country where the farmers have the slightest degree of independence. The offenders are really tried before the party against whom the offense is alleged to have been committed—the governor, the chief engineer, or his deputy, and three prominent citizens of the province, to be chosen by the minister of the interior. There is no appeal where the sentence carries a fine only, and where both fine and imprisonment is the sentence, no appeal can be had unless the fine is paid. Then the appeal is had to a special committee composed of the under secretary of state, a khedival counselor, and a delegate from the ministry of public works. It

¹ See Secs. 94, 96-99.

will be noticed that in both tribunals there is at the start a majority in interest against the accused.

Art. 40 provides that the sheiks and watchmen, and the overseers shall be held personally responsible for the dikes and canals and all works of art which may be located within their respective jurisdictions; and, in case of offense, they are held personally liable for the expense of repairing the works, should the offenders not be apprehended. If this law was enacted in certain sections of our own country, making the officers personally responsible, the chances are that more criminals would be apprehended.

The laws upon the subject of water-lifting devices and pumps are also executed by the inspectors.² There is one feature of this law which has been adopted in many of our Western States, and that is that the right to install such a device must be upon a permit based upon an application made to the Government by the water user. This feature of the law in this country is applied to all rights to the use of the water by appropriation, and that, too, whether the water be taken from its natural source by pumps, or whether it flows to the place of use by gravity.

§ 101. **The law of State control in Egypt, as compared with that in this country.**—As has been seen in the preceding sections,¹ the question of irrigation is, above all, paramount in modern Egypt, as it has been in ages which are past.² If the science were abandoned, the whole country would immediately become a barren and desolate waste. If the modern methods for the regulation of the flow of the Nile should cease, a great part of the now cultivated portion of the country would revert to its natural desert condition, and the cultivation would be confined to that portion which was naturally flooded by the high Nile, and the small strips along the very margin of the river. The present method of controlling and utilizing the waters of the Nile has brought great changes in the physical conditions of the country, as well as in its economical conditions, and in its laws relating to the subject of waters and water rights. From a study of these laws, it will be readily seen that they embody a system of State control of the most extreme type, the like of which can not be found in any

² See Sec. 98.

¹ See Secs. 88, 89.

² For Ancient Irrigation in Egypt, see Secs. 95-98.

other country. And, as far as irrigation is concerned, the system constitutes a government of engineers. And, it is easy to see from what source some of our own States, which have adopted the most radical forms of the law of State control, derived their ideas.³ In the United States, during recent years, there has been a great deal of discussion as to whether the State or Government control was the better system, or whether the control and use of waters should be by local organizations more directly connected with and managed by the people of any particular locality, and who were directly interested in the use of the water.⁴ By the Supreme Court of the United States, it has been practically settled that each State has the right to adopt any laws that it may see fit, to govern and control the waters flowing within their respective boundaries and their use.⁵ It has, therefore followed that some of the jurisdictions have adopted laws of almost absolute State control, based somewhat upon the Egyptian system, while other States have adopted laws based upon other systems, or original with themselves. Again, by the National Reclamation Act,⁶ the general Government of this country has adopted a law in which it seeks to control and regulate the distribution and use of all waters furnished by its various projects; but providing that the laws of the respective States wherein these projects are constructed must not be violated. But, in all of our laws the rights of the people are considered, and the rights of the individual users of the water protected.

But, under the Egyptian system of State control, the only object seems to be to make such a distribution of the water as will produce the largest return to the public treasury. The great defect of the modern Egyptian system is that the people are not considered as having any rights, but are treated solely as a revenue-producing body. The farmer who receives water one year has no assurance that he will be served the next year; and that, too, without any recourse for the taking away his supply. The English have undoubtedly made many improvements over the old systems, and the fellahin are now in a better condition under their rule

³ For the Laws of State Control, see Chap. 68.

⁴ For the Irrigation District Laws, see Chap. 70.

⁵ For the Rights of States, see Sec. 593.

⁶ For the National Reclamation Act, see Chap. 65.

than they have been before in centuries. They have in that country probably the best laws upon the subject which could have been adopted under existing circumstances. But, as far as a free people are concerned, this absolutism in the Government, and Government engineers, with an entire disregard of the rights of the people, is not the form of law best adapted to our conditions.

The irrigation laws of the Western States of the United States are framed to protect the individual farmer, and not for the sole purpose of producing revenue. This fundamental difference in the objects to be obtained makes Egypt's administrative system inapplicable to this country. There is every reason for not changing our policy. It is a wise policy that our irrigation administration should promote the prosperity of the water user as far as possible. And whether this policy can be obtained through the system of State or Governmental control, or by laws giving the control into the hands of the water users, will be discussed in a subsequent portion of this work.⁷

§ 102. The lessons to be derived from the Egyptian system.—In concluding this subject we will say, that through the English administration in Egypt, we of the United States can learn many things.¹ First among these is the showing of the yields and profits

⁷ See State Control, Chap. 68.

See Irrigation District Law, Chap. 70.

¹ According to the English idea, the English government in Egypt has been the salvation of that country. Upon the retirement of Lord Cromer from the position of English representative in Egypt, a noted English writer said:

"The great majority of the inhabitants of Egypt are small, hard-working peasants, and these take a far greater interest in matters concerning their daily bread, such as taxation, police, sufficiency of water, than in national representative government. The fellahin care most for a good administration, and they have every reason to be quite satisfied with Brit-

ish rule. Former rulers of Egypt exploited the people without mercy. Mahommed Ali and Ismail, who piled up a national debt of £100,000,000—two rulers whom the older men still remember—saw in Egypt their private domain. They and their favorites ground down the people on whose work they lived. Not only was the fellah overloaded with taxes, pressed into the army—which at one time comprised 160,000 men—ordered to forced labor and flogged with the courbash, but the water necessary for the irrigation of his crops was diverted from his land to the lands of the Khedive and his favorites. Egypt was ruled by the four C's—the corvée, the courbash, conscription, and corruption. The Egyptian cultivator was the most un-

of irrigated land. In this, Egypt is full of significance and promise to the arid sections of the United States. It is only on irrigated land that the average net return from sugar cane reaches \$80 to \$100 an acre. The revenues of the Egyptian government from lands devoted to dates runs from \$10 to \$45 an acre, and the net profit to the farmer approximates \$150 an acre. This little tract of agricultural land, no larger than the irrigable area of California, supports between 5,000,000 and 6,000,000 people, pays the expenses of a costly government, and meets the interest on a national debt half as large as our own, and this, too, from the returns of agriculture alone.

The great storage works of Egypt are of especial interest to the engineers of this country. Especially interesting are the great dams across the Nile, the foundation of the one at Assuan going down to bed rock. But the other great dams below Cairo, the one at Asuit, and the one at Esna, have no better foundation than the accumulated Nile mud, the bed rock itself being some hundreds of feet below this mud and sand. They rely upon their broad bases

fortunate worker on earth. Nowhere in Turkey was misrule more flagrant and more heartless than in Egypt. These were the fruits of national rule."

The improved aspect of the fellah's lot since Lord Cromer took the reins is thus described:

"Since the English occupation, the fellah has been given justice and prosperity. He has been given water in plenty through the regulation of the Nile and the construction of the Assuan Reservoir; he is no longer robbed of his land or of his work; he can easily obtain justice in the courts against the mightiest pasha; he is lightly taxed; he can borrow money at moderate rates; the corvée and conscription have been abolished; he has become free and very prosperous. Of 1,147,324 owners of land, more than 1,000,000 own five acres or less; and while the acreage possessed by these small holders has, during the

last ten years, increased by 30 per cent, the acreage of the largest holders has decreased by 7 per cent. These figures eloquently prove that Egypt is being ruled for the greatest good of the greatest number. During the British occupation the productive power of the country and its population have doubled. Egypt has risen from bankruptcy to affluence because Lord Cromer followed the policy of 'Egypt for the Egyptians' in the broadest sense of the word. These are the fruits of British rule. The Egyptians can not even complain of being ruled by Englishmen. First, the number of Egyptians possessing the technical skill or the strength of character required in certain branches of the administration is quite inadequate. Secondly, out of 13,279 civil servants, 1252, or 1 in 13, are Europeans, and only 662, or 1 in 20, are Englishmen."

for their structure and properly distributing their weight across the river upon this concrete sill.

The methods by which the great irrigation works costing hundreds of millions of dollars have been financed is of interest to the capitalists of this country.

As far as the mechanical devices for lifting water, cleaning and building ditches, or cultivating the fields are concerned, we can learn nothing. We in this country have modern machinery for all this. In Egypt the fellah working for 15 cents per day still uses the crude lifting machines of the times of the Pharaohs for raising the water, a crooked stick for a plow, cleans out the canals and ditches by scraping the mud into baskets which he carries out upon his back.

Upon the questions of law regulating the use and control of water, the actual operations of applying the water to the land, there is but little for the American irrigator to learn. Egypt is governed by a foreign power, which has assumed arbitrary control over the water supply, recognizing no rights to those who actually use the water. As Elwood Mead says: "Such a system has brought about an efficient use of the Nile, but it is repugnant to American ideas. It is a success in Egypt because of lack of means on the part of the agricultural population and lack of the experience in business and political affairs, needed for the successful operation of irrigation systems under private ownership. The American farmer has both the economic ability necessary to the management of irrigation works and the political power and the intelligence to create institutions for controlling the water supply which will be in harmony with our ideas of free government. The study of Egyptian laws and administrative methods, while interesting, is of little value as an example to be followed."²

It is, however, from the lessons derived from foreign countries upon this subject, that we in this country have received our greatest knowledge of the most appropriate laws governing the subject of waters and their use by the individual.

² Egyptian Irrigation: a Study of Irrigation Methods and Administration in Egypt, by Clarence T. Johnston, 1903, Bulletin No. 130, Office of

Experiment Stations, U. S. Dept. of Agriculture, letter of submittal, p. 6, by Elwood Mead, Chief of Irrigation Investigations.

CHAPTER 5.

MODERN IRRIGATION IN INDIA.

- § 103. Peculiarities of the country.
- § 104. Operations by the English.
- § 105. Division of irrigation works—Expenditures and revenue.
- § 106. Costs and profits in India as compared with those of the United States.
- § 107. The Government of India makes a net profit on its irrigation works.
- § 108. The Ganges Canals—United Provinces.
- § 109. The Sirhind Canal and other Punjab canals—Total mileage.
- § 110. Attitude of the Government toward irrigation.
- § 111. The construction of works—Officers in charge.
- § 112. The administration of works—Officers in charge.
- § 113. Laws—Title to lands—Methods of leasing.
- § 114. Irrigation laws governing the Northwest Provinces—Act of 1845.
- § 115. The Northern India Canal and Drainage Act of 1873.
- § 116. The Bombay Acts of 1879 and 1880.
- § 117. The Burma Canal Act of 1905—The Punjab Minor Canals Act.
- § 118. Conditions and results in India and this country compared.

§ 103. **Peculiarities of the country.**—India, like China,¹ is another country having a dense population, and traces her irrigation works to very ancient times.² But, unlike Egypt, as far as is now known, her ancient systems nowhere equaled those of modern construction.³ The older irrigation systems in India were comparatively small; and, until the English constructed the modern systems in that country, they were nowhere near the magnitude that were found in other ancient countries.

This undoubtedly was due to the physical structure of the country. Some of the mightiest works of Nature are to be found in that country. India includes within her borders the highest mountains in the world and some of the mightiest rivers and greatest plains. The great Himalaya range, 1,500 miles long, lying across the northern border, shuts out the rest of Asia. Mount Everest,

¹ For Ancient Irrigation in China, see Sec. 69.

For Modern Irrigation in China, see Chap. 9, Secs. 168-170.

² For Ancient Irrigation in India, see Sec. 70.

11—Vol. I—Kin. on Irr.

³ For Ancient Irrigation in Egypt, see Secs. 65-68.

For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

the highest peak in the world, pierces the sky 29,002 feet above the sea, while peaks of over 20,000 feet elevation abound in all parts of the range. The historic Ganges, the Indus, and the Brahmaputra are the three great rivers of India. These rivers, with their affluents drain an area of nearly 900,000 square miles. The discharges of these streams are enormous; the Ganges alone, in flood, may discharge 1,350,000 cubic feet per second. This is caused from the fact that India has the heaviest rainfall in the world. This rainfall, which is accountable for this immense volume of water, comes exclusively from the evaporation from the Indian Ocean and the bays on either side of the peninsula. The distribution of this rainfall is extremely varied, ranging from a couple of inches a year, or in some sections practically nothing, to over 600 inches, which falls in a limited area in Assam. At Chara Pungi, Assam, the maximum rainfall of the world is reached in an average annual precipitation of 368 inches, while at the same place in 1861, it is recorded that 30 inches fell in 24 hours, and 805 inches fell during the year.⁴ These figures can be appreciated when it is remembered that the annual rainfall in the Atlantic States of our own country is from 30 to 45 inches, and that in the West farming is conducted without irrigation on as low an annual rainfall as 15 or 16 inches. It can be readily seen from these conditions why the ancient East Indians did not construct works of the magnitude that were found in other ancient but arid countries.

No other country, unless it may be our own, has so vast and so fertile an expanse of territory, with such convenient slopes for the construction of canals, and, at the same time such an abundant supply of water. In general, there is a great similarity between the topography of the great northern plains of India and portions of our own country, especially on the eastern slope of the Rocky Mountains. In Central India, there are many features in common with the central portion of the arid region of this country, particularly in portions of northern Arizona and New Mexico and in southern Utah. The temperature is hot as a general thing, but it gets no hotter than it does in certain portions of the States mentioned. The average temperature, however, is higher. On the southwest coast, at Goa and Cochin, the annual average tempera-

⁴ Irrigation in India, by Herbert M. Wilson, 1903, 2d Ed., p. 44, Water-Supply and Irrigation Paper No. 87, U. S. Geol. Survey.

ture is nearly 80 degrees; at Calcutta it is 79.2 degrees, and at Bombay, 78.8 degrees. At the hill station of Simla, at an elevation of 7,100 feet, the average annual temperature is 54.4 degrees.

At the close of 1901 the area of India, including native States, was 1,559,603 square miles, and the total population was 294,266,603.

§ 104. **Operations by the English.**—As is the case in Egypt, so also it is the case in India, all of the modern irrigation works have been constructed by the English since they gained possession of that country.¹ However, the science of irrigation in India has been practiced for many centuries, first by utilizing small streams, and then the great rivers. As population increased, a new system for the storage of water was developed. In that land a rainy season prevails, when great quantities of water are precipitated, but during the season of growing crops the country is hot and dry. Under these conditions the people learned to store the storm waters in reservoirs constructed by erecting dams across gulches, and hundreds of thousands of these storm tanks were ultimately made. Since the British have held control of India, irrigation works have been constructed on stupendous plans. The hydraulic engineering practiced in their construction vies with the best in the world; and no longer is irrigation precarious, for the streams and storm waters are controlled by the highest human art. Today India stands pre-eminent for her gigantic irrigation undertakings.

In 1867 the Government decided to construct its own irrigation works and great activity prevailed at once, the Government irrigation force being largely increased. In 1869 schemes for ten years' work, involving \$150,000,000 expenditures, were outlined, and the following sums were expended: In 1867, \$1,096,000; in 1868, \$2,344,250; in 1869, \$10,040,000, and so on. The total expenditures for the first ten years actually amounted to \$52,850,000. Since then the Government works have generally proved satisfactory investments, and as they have certainly added to the wealth and prosperity of the country and have mitigated the severity of famines, large sums have been annually appropriated for the maintenance of existing works and the construction of new ones.² Ac-

¹ For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

² Irrigation in India, by Herbert M. Wilson, 1903, Water-Supply and Irri-

according to the report of Mr. Herbert M. Wilson, "the grand total expended on such work from 1867 to 1900 being \$337,850,000."³ This sum must have included the additions and annual repairs on the many works which were constructed at the time of the Native rule in India amounting to from \$5,000,000 to \$10,000,000 annually, and works for which capital accounts are not kept by the British Government. According to the official report of W. F. O'Donogue, Esq., Accountant General of the Public Works Department in India, which lies before us, dated August 15, 1907, up to the first day of January, 1907, the Government, upon "all works for which capital and revenue accounts are kept," had expended the sum of Rs. 48,14,12,734.⁴ No other government in the

gation Paper No. 87, U. S. Geol. Survey.

³ Irrigation in India, by Herbert M. Wilson, 1903, Water-Supply and Irrigation Paper No. 87, U. S. Geol. Survey, 2d Ed., p. 34.

⁴ This, according to the East Indian notation, equals 48 crores, 14 lacs, and 12,734 rupees. The basis of this system of notation is the rupee, which weighs approximately 175 grains of silver and formerly depended for its value upon the price of silver, but which now has a fixed value of 1s, 4d, or 32.443 cents; 100,000 rupees is called a lac, and 10,000,000 rupees is a crore. The above notation of the government accountant is upon the system used in India. All sums between 100,000 and 10,000,000 are written in lacs, thousands of rupees, etc., and all sums above 10,000,000 are written in crores. Taking the above amount for example, it equals 48 crores, 14 lacs, and 12,734 rupees.

See, also, the report of L. M. Jacob, Esq., Secretary to the Government of India, dated Aug. 15, 1907, and covering the same dates.

The above reports were furnished the author through the kindness of

the government, by S. Eardley-Wilmot, Inspector General of Forests to the Government, and are the last reports which are available to the author.

Upon the general subject of irrigation in India, see the various Annual Reports issued by the Department of Public Works of the Government of India.

See, also, the Imperial Gazetteer of India for the various years, printed at the government general printing office, Simla, subject, Irrigation.

Irrigation Works of India and Egypt, by R. B. Buckley, 1893, E. & F. Spon, London, or Messrs. Spon and Chamberlain, 123 Liberty Street, New York; Facts, Figures and Formulae for Irrigation Engineers, by R. B. Buckley, may be procured from same as last above; Indian Storage Reservoirs with Earthen Dams, by W. L. Strange, may be procured from same as last above; Irrigation in Madras Presidency, by J. C. Anderson, Professional Papers, second series, No. 253; Duty of Water, and Memorandum on Irrigation, by J. S. Beresford, Professional Papers, second series, Roorkee, India; Report on the Ganges Canal Works, 3 Vols. & Atlas,

world has expended anywhere near the enormous sum as has been expended by the British Government in India. But, in spite of this vast outlay, this expenditure has been a profitable investment to the Government, as we shall show in another section.⁵

§ 105. **Division of irrigation works—Expenditures and revenue.**—For governmental purposes, the irrigation works of India are divided into major and minor works; major works being further subdivided into productive, or those which are expected to pay the cost of maintenance and also interest on capital outlay, and protective works, which are calculated to guard against a probable future expenditure in relief of distress, such as famine. Minor works are also subdivided into: (a) Works for which capital and revenue accounts are kept; and, (b) works for which capital accounts are not kept.

There are 50 works classed as productive works, nine of which were not open for irrigation at the beginning of the year 1907, and 13 of which have failed to fulfill the conditions of productive works as above stated. The capital invested on the construction of productive works at the beginning of the year 1906, amounted to Rs. 38,76,55,188, and in spite of the fact of the 21 actually non-producing, as above stated, the net revenue derived by the Government from them during the year ending December 31, 1906, was Rs. 2,76,64,406, or a return of 7.14 per cent on the capital outlay.¹

Sir Proby T. Cantley, London, 1860; Report on the Ganges Canal, by J. Crofton, 3 Vols., Public Works Dept., Calcutta, India; Irrigation and Reclamation of Land for Agricultural Purposes in India, Egypt, Italy, etc., by Prof. Geo. Davidson, 1875, Executive Document No. 94, U. S. Senate, 44th Congress, Washington, D. C.; Irrigation and Drainage in the Dehra Dun, by R. E. Forest, Professional Papers No. 5, Roorkee, India; Mutha Canals, by J. H. E. Hart, 1879, Bombay, India; Tank Irrigation in Ajmere and Mairwara, by F. Home, Professional Paper No. 229, Roorkee, India; Madras Engineers, Professional Papers, 4 Vols., Madras, India, 1856;

Manual of Irrigation Works, by J. G. Medley, Thomason Civil Engineering College, Roorkee, India, 1873; Irrigation Manual, by Lieut. Gen. J. Mullins, E. and F. Spon, New York and London, 1880; Irrigation Experiments, by E. C. Palmer, Professional Papers, 2d series, No. 35, Roorkee, India; Irrigation in Mysore, Professional Papers Nos. 141 and 150, Roorkee, India, by Maj. R. H. Sanky.

See, also, the various Reports of the Famine Commission.

⁵ For the Profits to the Government, see Sec. 106.

¹ For the equivalent of the rupee monetary system of computation in dollars, see note to Sec. 104.

On January 1, 1906, there were in India 35,730 miles of open productive irrigation canals, and the area actually irrigated during the preceding year was 14,205,158 acres.

The protective works, as the name implies, are all canals and other works so classed, as are constructed on the consideration of the protection they give against famine without any expectation upon the part of the Government of a return sufficient to pay interest and the expenses of maintenance. At the beginning of the year 1907, there were 30 of such works so classed, 23 of which were then under construction in various parts of the country, where they were needed the most. The total capital expenditure on these works on the 31st of December, 1905, was Rs. 3,12,88,246. However, these works actually gave a net revenue to the Government for the year 1905, of Rs. 6,03,229. And, on the first day of January, 1906, there were 1,351 miles of open protective canals; and the area irrigated during the preceding year was 471,372 acres.

Of minor works, class (a), works for which capital and revenue accounts are kept, there were 91 works so classed on January 1, 1906, and of these six were purely navigation works. On the 31st of December, 1905, the expenditure incurred on the construction of irrigation works alone, amounted to Rs. 4,00,69,156, and the net revenue during the preceding year amounted to Rs. 27,87,516, or a return of 6.96 per cent on the capital outlay. There were irrigated during the year of 1905, 1,696,866 acres. The capital outlay on the 31st of December, 1905, on the six navigation canals amounted to Rs. 2,24,00,144, and the net revenue during that year was Rs. 40,001. The minor works, class (b), works for which capital accounts are not kept, are numerous and are all small works, many of which were constructed at the time of Native rule in India. The cost of their construction can not be ascertained, and separate capital and revenue accounts are not therefore kept for them. The enhanced land revenue due to these works is assessed and collected along with ordinary land revenue, and accounted for in the civil accounts.²

² The above was taken from the Report by W. F. O'Donogue, Esq., Accountant General, Public Works Department, upon the accounts of Revenue and Expenditures of Irrigation Works in India for 1905, 1906, and

dated Aug. 15, 1907. See, also, for figures verifying the same, the report of L. M. Jacob, Esq., Secretary to the Government of India, Simla, dated Aug. 15, 1907.

§ 106. **Costs and profits in India, as compared with those of the United States.**—It will be interesting to examine the items of cost, interest, and revenue of such a canal as the Sirhind Canal, and to make comparisons between these costs and returns, and what might be derived from a similar work if made in the United States. In making this comparison, the amounts reported in the revenue returns for such expenditures as pensions, furloughs, and navigation works must be deducted from the total outlay, for the reason that these elements of expense do not enter into the calculations in this country. Also due allowance must be made for the difference in cost of each class of construction in the two countries, and for the water rate to be charged. To the end of 1901, the total expenditure on the Sirhind Canal was \$19,663,000, of which \$6,749,000 was interest while the work was under construction, and \$1,000,000 was leave and pension allowance to employees. Though such a work would have been constructed in much shorter time in the United States, owing to the substitution of machinery for hand labor, the higher rates paid in our country for interest would probably more than equalize the charge. The total original cost of the works was about \$12,000,000, from which must be deducted \$2,200,000 for pensions, and \$1,100,000 for tools and plant, which leaves a balance for net cost of \$8,700,000. This makes a charge of about \$8 per acre irrigated in India, where it is estimated that the same works would cost in this country about \$15.35 per acre.

Owing to the recent completion of the Sirhind Canal in 1901, it then irrigated but 1,170,000 acres. This, however, paid in 1901 a profit, after paying interest on the capital outlay of 4.7 per cent per annum, or 9.1 per cent on the capital invested. The water rate charged averaged 90 cents per acre irrigated. We, in this country, would charge at least \$2. The cost of construction being nearly double in the United States to that in India, and the receipts per acre nearly three times as great in this country, such a great work when doing its maximum duty would realize as a minimum 10 per cent on the capital invested.

In addition to the amount of profit realized to the Government, there is one source of revenue in the United States which does not exist in India. That is the annual increase in value of the land served by the canal to the individual owners of this

country. Owing to the fact that in India an individual can not acquire title to land, but it is all owned by the Government, there is no such increment available to private enterprise in India. In the United States, however, where land can be purchased for from \$1.25 to \$2.50 per acre, and when supplied with a water right will sell for from \$40 to \$100, or even higher, per acre, or bring an equivalent revenue, the increased return from such an investment is obvious.

§ 107. **The Government of India makes a net profit on its irrigation works.**—After charging up all the expenditures for the construction of all of the irrigation works in India, and also the expenses for interest and maintenance, the result shows a net profit to the Government; and that, too, in spite of the fact that many of the individual canals are an actual expense, owing to the fact that they are still incomplete, and do not yet irrigate the area for which they are being constructed.

The general financial results of all works for the year of 1906, as the same is reported by the Accountant General of the Public Works Department of India, upon the accounts of revenue and expenditures for that year, is as follows: ¹

See also the Review of Irrigation in India for the year 1905-6, by L. M. Jacob, Secretary to the Government of India, and dated,

| | Productive Works Rs. | Protective Works. Rs. | Minor Works. Rs. | Total. Rs. |
|---|----------------------------|-----------------------------|------------------------|---------------|
| Capital Outlay— | | | | |
| During 1905-6..... | 88,81,365 | 36,16,750 | 19,71,503 | 1,44,69,618 |
| Total to end of 1905-6.... | 38,76,55,188 | 3,12,88,246 | 6,24,69,300 | 48,14,12,734 |
| Revenue Account, 1905-6— | | | | |
| Gross revenue..... | 4,15,95,240 | 9,73,779 | 49,83,188 | 4,75,52,207 |
| Maintenance and working | 1,39,30,834 | 3,70,044 | 21,55,671 | 1,64,56,549 |
| Net revenue..... | 2,76,64,406 | 6,03,735 | 28,27,517 | 2,10,95,658 |
| Interest | 1,45,19,532 | 11,02,310 | ..... | 1,56,21,842 |
| Net profit after paying interest | 1,31,44,874 | 4,98,575 | ..... | 1,26,46,299 |
| Percentage of net revenue for the year on capital outlay to end of year.. | 7.14 | 1.93 | 4.74 | 6.46 |
| As against year 1904-5... | 7.61 | 1.97 | 4.93 | 6.93 |
| As against year 1903-4... | 7.43 | 2.90 | 5.42 | 6.93 |

¹ The above is in British-India notation, for which see note to Sec. 104.

Simla, August 15, 1907, in which there is this significant statement: "The total area (irrigated) was nearly 23,000,000 acres, while the value of the crops raised by the works, for which capital accounts are kept, is estimated at Rs. 51.6 crores,² or nearly 108 per cent of the capital outlay expended on them."

The total area cultivated in 1901 was 180,151,093 acres, and the total area then irrigated was 18,611,106 acres. Between the years 1901 and 1907, this was added to by about 5,000,000 acres. The additions to the irrigated area is also constantly being made by the construction of new works and the addition of acreage under old ones.

§ 108. The Ganges Canals—United Provinces.—Let us examine some of the individual canals of India. The greatest of all these works, and in fact, the largest in existence in the world, is the Ganges Canal. The total length of the main canals of this system is 419 miles, with a bottom width of 170 feet, all of which is navigable. The maximum discharge is 7,782 second feet. The total mileage in operation, including main distributaries, on January 1, 1907, was 3,259 miles, and during the preceding year it irrigated 1,369,393 acres. On January 1, 1907, the total cost was Rs. 3,24,86,256, and during the preceding year had yielded to the Government a gross revenue of Rs. 39,24,454, or a net profit of Rs. 13,84,815, and a total net profit, since the beginning of operations, of Rs. 2,14,45,883.¹

There are 2,800,000 acres under the system, and the irrigable area is 1,820,000 acres. The above figures, as to the actual workings under the system, are from the official report of the Accountant General of the Public Works Department of India, dated August 15, 1907. And, while we have not the figures, we understand that the area irrigated from the system has been very much enlarged since that report. The magnitude of this system can be appreciated when we come to consider that the total length of the main canal and the main distributaries are about as long as is the distance from New York to San Francisco.

The Lower Ganges Canal system is nearly as large as that of

² This equals 516,000,000 rupees, equal to 32.443 cents each, or about \$172,000,000, for the year 1905.

¹ For the reduction of the above notation to dollars, see Sec. 104, note.

the Ganges proper. On January 1, 1907, it had a total mileage of 3,227 miles, and during the preceding year irrigated 1,062,980 acres. On January 1, 1907, the total cost of this canal was Rs. 3,68,65,888, and during the preceding year yielded to the Government a gross revenue of Rs. 25,22,451, or a net profit of Rs. 1,53,642, and a total net profit, since the beginning of operation, of Rs. 23,19,126.

There are also a number of other large systems which take their water from the Ganges River in the United Provinces, all of which show a total net profit to the Government. The Agra Canal shows a net profit of Rs. 9,05,106; the Eastern Jumna Canal, of Rs. 2,62,54,777; and the Fatehpur branch, Lower Ganges, of Rs. 8,78,627.

§ 109. **The Sirhind Canal, and other Punjab canals—Total mileage.**—Another great irrigation system in India, and one that is likely to exceed that of the Ganges Canal, is that of the Sirhind Canal in Punjab. The total length of the main canal is forty-one miles, with a maximum discharge of 7,849 second feet. The total mileage in operation on January 1, 1907, was 3,004 miles; this included main distributaries only. And during the preceding year it irrigated 759,008 acres. On January 1, 1907, the total cost was Rs. 2,48,49,664, and during the preceding year yielded to the Government a gross revenue of Rs. 27,06,842, or a net profit of Rs. 8,32,305, and a total net profit, since the beginning of operations, of Rs. 21,26,213.

This canal is one of the newer systems in India, and is destined to become one of its largest. The gross area commanded by the system is 4,558,602 acres, about one-half of which is irrigable. Since the report from which the above figures were taken,¹ the irrigated area has been largely increased, and also the net profits to the Government. Of the important canals in India, the Sirhind far exceeds all others in matters of engineering interest, as it is one of recent and modern construction, besides being one of the greatest.

There are also a number of other great canal systems in Punjab, all of which show a net profit to the Government. The Western Jumna Canal shows a total net profit to the Government of

¹ That dated Aug. 15, 1906.

Rs. 4,08,90,148; the Bari Doab Canal, of Rs. 2,23,63,172; the Upper Sutlej Canal, of Rs. 7,53,270; the Lower Chenab Canal, of Rs. 2,91,52,955; the Sindhnai Canal, of Rs. 22,64,322; the Lower Jhelum Canal, of Rs. 25,92,322; the Indus Inundation Canal, of Rs. 1,53,348; the Upper Chenab Canal, of Rs. 41,795; and the Upper Jhelum Canal, of Rs. 27,501.

There are other canal systems, which would be considered enormous in this country, in the provinces of Burma, Bengal, North-west Frontier Province, Bombay, and other portions of India. But space will not permit a description. However, the total mileage of all main India canals, including their main distributaries, on January 1, 1906, was 35,730 miles—nearly enough to go once and one-half around the earth.

§ 110. Attitude of the Government toward irrigation.—In order to convey a clear understanding of the method of promoting irrigation development in India, it is essential to first give a brief outline of the present attitude of the English rulers toward irrigation. At first, the Government permitted private corporations to construct and operate irrigation works, the earliest work planned by British engineers being undertaken by a private corporation on a guarantee of interest by the East India Company. During the last thirty years the Government has been active in the promotion and construction of nearly all good works projected. These projects are studied, examined, and reported upon usually several times during a series of years, and when the Government is finally satisfied with them, either as financial investments or as measures for the relief or prevention of famine, the work is sanctioned and the funds for its construction are appropriated.

The Government of India is, as a rule, greatly in favor of the extension of irrigation works. It encourages enterprises by granting loan funds for the construction of works whenever it can be proved that profits, increase of interest, and all the maintenance charges will probably be derived. It also constructs works as a means of famine relief in certain places, even when profits can not be obtained. The Government further fosters the use of irrigation waters by making the water rates very low, or by even giving water away in years of scarcity. As shown in the suc-

ceeding acts, the Government of India has entire control over all sources of water supply, and so exercises it as to make it the greatest benefit to the community at large. The powers of control over the waters for irrigation are entirely centralized.

But, unlike this country, in its National Reclamation Act,¹ where the money advanced by our Government is in the nature of a loan, without interest, and for the primary benefit of the settlers, the British Government in India always insists upon its net profits on all of its "productive works." Even in the works which are constructed primarily for the relief from famine and called "protective" works, and not constructed for profit, when a state of famine does not exist, and a profit may be derived by the Government, it always insists upon it. And, from such works, according to the report of the Accountant General of the Public Works Department of India, dated August 15, 1907, the total net profits from protective works alone are Rs. 1,12,05,456.

§ 111. The construction of works—Officers in charge.—The irrigation works of India are constructed by the officers of the construction division of the irrigation branch of the Public Works Department of the Government, and at Government expense. Each province of India has a separate branch of the Public Works Department, known as the irrigation branch, at the head of which is a chief engineer, generally also secretary to the government of that province, and over all the chiefs of engineers is an inspector general of irrigation, attached to the staff of the Governor General of India. The officers in the upper grades of the irrigation branch are nearly all Europeans, and are recruited from the royal engineers, or from civil engineers educated in well known colleges either in England or India. The lower grades of officers are composed of selected non-commissioned officers and soldiers, and from natives who have passed an examination after studying for a period at some college. The chief engineer is the head of the department in the province, and this latter is divided into circles, presided over by superintending engineers. Each circle is again divided into divisions, over which executive engineers preside. Each division is again divided into subdivi-

¹ For the National Reclamation Act, see Chap. 65.

sons, of which there are generally several under the charge of an assistant engineer. This concludes the list of the upper grades, and it will be noticed that from the top down the works are in charge of engineers, who hold their positions upon the merit system alone, and not on account of political influence or favoritism.¹

§ 112. The administration of works—Officers in charge.—The administration of the irrigation works of India is also conducted by the Public Works Department, and the engineers are all civil servants in the employ of the British Government. Their status is fixed by law, their promotions are usually by seniority, as in the army and navy, and, like the members of those branches of governmental service, they receive stated salaries, according to the grades they occupy. They are entitled to leaves of absence and furloughs, and are retired with a pension after certain periods of service.

The executive authority of India is vested in a Governor General, called the Viceroy, who is appointed by the Crown, and acts under the orders of the Secretary of India. The laws are enacted by the Governor General and a council of seven members.

The country is divided into British Territory and native States. The larger presidencies of the former are governed by governors, appointed by the Crown, and each have their own council and civil service. The native States are governed by native princes. Land is the main source of revenue of the British Indian Government, and hence the levying and collecting of the land tax is the main work of the administration of that Government. In Bengal, the head man of a village makes the payment for the whole village to the Government, he collecting from each cultivator his portion of the revenues and retaining for himself a portion of the same. In other provinces the cultivator is the rent-paying unit. Each field is marked out, measured, and assessed separately. This method is simple, as the Government recognizes only the

¹ See *Irrigation in India*, by Wilson, 1903, U. S. Dept. of Interior, Water-Supply and Irrigation Paper No. 87.

The Northern India Canal and Drainage Act No. 8 of 1873; The Punjab Act No. 3 of 1905; The Burma Canal Act No. 2 of 1905.

For the laws upon the subject, see

owner of each field. With these owners settlements are made for periods of thirty years; in cases where the village is taken as a unit, terms of settlement are also made for periods of thirty years.

Besides the engineering department, which has been described in the preceding section, there is the revenue department, which works in conjunction with the engineering department, and whose duties are mostly concerned with the administration and the measurement of the fields for assessment.

All of the upper grades of officers—that is, from the assistant engineers upward—have to pass an examination in canal law, and are given magisterial powers, which enable them to inflict punishments for breaches of this law. The other powers conferred vary with the standing of the officers. ¹

§ 113. **Laws—Title to lands—Methods of leasing.**—By act of Parliament of August 2, 1858, all the territory of India was vested in Her Majesty, the Queen of England. All tributes and payments were disposed of in her name. Later, by act of January 1, 1877, Her Majesty assumed the title of Empress of India. The title to all the land in India is in the Crown. In Southern India, while the land owners do not own the land, they possess certain rights in it, such as the right to hold and to cultivate it so long as they make payment to the Government, which is usually made in a part of the produce raised on the land. In Northern India, there is a class of superior land owners between the cultivator and the Government. The cultivator cultivates the land and pays the rent to the landlord, and the latter pays a portion of this to the Government. These proprietors are associated together in villages, with an elected or hereditary head, who is responsible to the Government for the rent of the entire village. A system of leases is in vogue throughout the country. In Southern India, where the cultivators hold the land, it is leased to them for fixed periods of thirty years, though they can resign these holdings at the end of each agricultural year. They can sell or mortgage the land, and at the death of the holder his heirs inherit the right to the lease. In these southern presidencies each village is indicated on the revenue map, with a defined boundary, and

¹ For the laws upon the subject, see Acts cited in previous section, No. 111. See, also, Secs. 113-117.

each field is marked out and numbered on the village plan. The different classes of soil are indicated in colors, with a description of the class of tenure, marked in a register accompanying each map, in which are also indicated all particulars of soil, tenants, and amount of assessment. The size of the field is determined by the extent of the particular variety of soil which can be cultivated with the assistance of a pair of bullocks. Thus, in light, dry soil, a field will constitute twenty acres; in heavy, dry soil, twelve acres, and in rich garden land, four acres. Some of the circumstances affecting the classification of land and the value of the fields are the position of the latter with respect to the village, the facilities for agricultural operations, the character of the soil, and the opportunities for irrigation.

§ 114. Irrigation laws governing the Northwest Provinces—Act of 1845.—The laws governing water rights, and the rules and regulations by which water is served to cultivators, are detailed in the various Canal Acts. The first Act bearing on irrigation legislation was Act VII, by the Governor General of India, in council, passed April 12, 1845, and covered the whole of the Northwest Provinces of India. This was entitled, “An Act for the regulating the levy of water rent, tolls, and dues on certain canals of irrigation constructed by the Government in the Northwest Provinces, and the protection of the said canals from injury.

“And it is hereby enacted that the said lieutenant governor of the Northwest Provinces shall be competent to draw out rules to regulate the levy of water rent and the supply of water for irrigation. . . . The rules thus drawn out shall be published for general information in the Government Gazette.

“And it is hereby enacted that all balances of water rent due for lands irrigated by the canal shall be levied, either by temporary deprivation of the benefits of the canal, or by the same process as is prescribed for the recovery of balances of land revenue.

“And it is hereby enacted, that whoever willfully causes any obstruction to any of the said canals, or to any of the water courses drawn and supplied therefrom, or damages the banks of the canal, or the works constructed for its maintenance, or will-

fully defiles the water in the canal, shall be liable to the penalties hereinafter described.

“And it is hereby enacted, that all persons offending against the provisions of this act shall be punishable, on conviction before the magistrate, by imprisonment without labor for a term not exceeding fourteen days, or a fine to an amount not exceeding fifty rupees (about \$25), or both; and in default of payment of such fine by an additional imprisonment of fourteen days.”

The rules “drawn out” under this Act, provide that the water is to be served to cultivators on certain days, depending upon the local conditions and soil. As, for example, very often it is served on three days in one week, or possibly they may be allowed to use it for a longer period, as for one week, and are then deprived of it for the next week. The period in which they are not allowed to use the water is known as the period of “tatil,” an Indian word, meaning closed. Breaches of “tatil,” or the taking of the water when its use is not allowed, render the individuals committing the act liable to fine or imprisonment, under the act quoted. The executive engineer of the division has entire control over the distribution of the water, and complaints regarding scarcity, repairs, misappropriation of water, etc., are all referred to him; and he, having magisterial powers, either decides them himself or empowers the supervisory officer or deputy magistrate to do so. The assistant engineer is generally a European, and his right-hand man, as far as irrigation matters are concerned, is the deputy magistrate, who is generally a native of some standing and education. These rules were drawn out by resolutions by the lieutenant governor of the Northwest Provinces on May 31, 1845, extracts of which are given in the foot note.¹

In addition to these, rules are laid down providing, that in the event of any person secretly taking water from the canal

¹ In conformity with section 8 of the aforesaid Act, the superintendents of the said canals are invested with the powers of deputy collectors for the levy of rents, and of joint magistrates for the enforcement of penalties under the aforesaid act, and their assistants are declared competent to exercise the same powers under their

directions and on their responsibility. The subordinate establishments of such superintendents have the power of subordinate revenue and police officers for the aforesaid purposes. An appeal lies direct to the commissioner of the division against orders passed by the superintendent or his assistants in the capacity of deputy col-

in any manner, for which rent is leviable, without entering into engagement to pay rent, or secretly taking more water than he has engaged to pay for, he shall be chargeable with double rates for all water so taken. Also rules are laid down defining the powers of superintendents and their assistants, and other officers on the works, as well as rules giving the charges which villages or individuals are subject to, who do not take water for irrigation, but who use it for watering live stock or for domestic purposes. The charges for filling reservoirs or tanks are also specified, as are the tolls for rafts or boats.

§ 115. The Northern India Canal and Drainage Act of 1873.—The law applicable to the Northwest Provinces referred to in the preceding section,¹ was superseded by the Northern India Canal

lector, and to the sessions judge against orders passed in the capacity of joint magistrate.

When it may be more expedient to give water on contract rather than according to the surface irrigated, the terms of contract may be as follows:

Where water flows naturally, 2 rupees (about \$1.00) per annum for each square inch of opening taken from the summit level of the water and having a free course.

All land brought into cultivation within 20 yards of the canal or any branch stream from it, subsequently to the construction of the canal, shall pay water rent, whether taking water or not; and similarly all land cultivated from wells which have been dug or reopened within 20 yards of the canal boundary, or within 10 yards from any branch stream from it, subsequently to the construction of the canal, shall pay water rent, whether taking water from the canal or not.

When, from the carelessness of cultivators either in not properly closing the heads of the water courses or in leaving the water courses in bad order,

the water overflows and spreads over waste or fallow land, a fine shall be levied not exceeding the highest rate of water rent leviable on the extent of land flooded.

It shall be in the power of canal officers to close the whole of the branch water courses from sunset to sunrise for the purpose of forcing the water onto the lower parts of the canal; and also, when necessary, for any period not exceeding three days in a week. At other times the water shall be at the command of the cultivators, provided it be in the power of the canal officer to furnish a supply. Persons taking water once so as to benefit a crop shall be liable to the charge for the whole year, or the whole crop, as the rate may be leviable.

Special agreements between individuals and the superintendent for the use of water for irrigation, for driving machinery, or for other purposes, on other terms than are embodied in these rules, shall be construed as other ordinary contracts are.

¹ See Sec. 114.

and Drainage Act of 1873, which Act is now in force in all of Northern India, including the Northwest Provinces. The rules for the distribution of water, quoted in the note of the preceding section were continued under the subsequent Act, and are now practically the same as stated.²

The preamble of this Act tersely states the claims of the Government in and to the waters, in the following language: "Whereas, throughout the Territories to which this Act extends, the Government is entitled to use and control for public purposes the water of all rivers and streams flowing in natural channels, and all lakes and other collections of water," etc.

Upon the subject of the application of the water for public purposes, it is declared that: "Whenever it appears expedient to the local Government that the water of any river or stream flowing in a natural channel, or of any lake or other natural collection of still water, should be applied or used by the Government for the purpose of any existing or projected canal or drainage work, the local Government may, by notification in the Official Gazette, declare that the said water will be so applied or used after a day to be named in the said notification, not earlier than three months from the date thereof."³ After the said date the power is given the canal officers to enter any land and remove obstructions, and do any other thing necessary for such application or use of the said water. However, claims for damages to existing rights are allowed.

Upon the subject of the construction and maintenance of works, powers are granted the canal officers to enter all lands for surveys and to clear them of buildings and improvements, for the purpose of rights of way for projected canals. Compensation for improvements destroyed is allowed by the Government, under special proceedings provided for in the act.

Any person desiring to use the water of any canal may apply, in writing, to the divisional or subdivisional canal officer of the division or subdivision of the canal from which the water course is to be supplied, requesting such officer to construct or improve

² See Sec. 114, note. This Act is known as "The Northern India Canal and Drainage Act, 1873," and designated as No. VIII.

³ Part 2, Sec. 5, Act above cited.

a water course at the cost of the applicants.⁴ The works will then be constructed by the Government and the expenses collected from the consumers, as provided.⁵

Upon the subject of the supply of water, written contracts may be made between the consumers and the Government, as prescribed by the act.⁶

The rates to be charged for canal water supplied for the purpose of irrigation shall be determined by the rules to be made by the local Government, and such consumers as accept the water shall pay for it accordingly. Provisions are also made for the collection of such charges.⁷

Provisions are also made for the navigation of such canals as are navigable, and the charges for the same.⁸ Also, provisions are made for the drainage of lands and for the collection of assessments and charges therefor.⁹

The law upon the subject of obtaining labor for canals is drastic, and provides that, whenever it appears to a divisional canal officer that, unless some work is immediately executed, such serious damage will happen to any canal or drainage work as to cause sudden and extensive public injury, and that the laborers necessary for the execution thereof can not be obtained in the ordinary manner, the said officer may require persons to labor or to furnish laborers for the immediate execution of such work. "The local Government shall fix, and may from time to time alter, the rates to be paid any such laborers."¹⁰

By the Act, jurisdiction is conferred upon the civil courts to try all disputes relative to water rights.¹¹ Also, offenses and

⁴ It must be noted that the word "water course" as used here is the term given to consumers' laterals, and not natural water courses.

For the definition of "water course" as used in this country, see Secs. 301-307.

⁵ Part 3, Secs. 14-30, Act above cited.

⁶ Part 4, Secs. 31, 32, Act above cited.

⁷ Part 5, Secs. 33-48, Act above cited.

⁸ Part 6, Secs. 49-54, Act above cited.

⁹ Part 7, Secs. 55-62, Act above cited.

¹⁰ Part 8, Secs. 63-66, Act above cited.

See, also, for the *corvée* in Egypt, Sec. 93.

¹¹ Part 9, Secs. 67-69, Act above cited.

penalties are prescribed, and criminal procedure for any violation of the provision of the act, or any rule made under the act. ¹²

§ 116. **The Bombay Canal Acts of 1879 and 1880.**—The principal Act establishing the laws governing irrigation in the presidency of Bombay is Act No. VII of 1879, which was amended in 1880 by Bombay Act No. III. The preamble of said Act reads as follows: "Whereas, it is necessary to make provision for the construction, maintenance, and regulation of canals for the supply of water therefrom, and for the levy of rates for the water so supplied in the Bombay presidency, it is enacted," etc. The Act then goes on to define in detail what are understood as canals, water courses, and drainage works; defines the various officers appointed by law, prescribes their duties and powers; and upon the subject of governmental ownership and control of the waters, provides when the waters of any source of supply may be taken for governmental purposes, and how controlled after so taken.

"Whenever it appears expedient to the governor in council that the water of any river or stream flowing in a natural channel, or any lake, or any other natural collection of still water, should be applied or used by the Government for the purposes of any existing or projected canal, the governor may, by notification in the Bombay Government Gazette, declare that the said water will be so applied or used after a day to be named in the said notification, not being earlier than three months from the date thereof.

"At any time after the day so named, any canal officer duly empowered in this behalf may enter on any land, remove any obstruction, close any channel, and do any other thing necessary for such application or use of said water, and for such purposes may take with him, or depute, or employ such subordinates and other persons as he deems fit."

These powers, as will be recognized by those living under the laws of the United States, are exceedingly broad, and in favor of the Government—no such thing as a vested right to the use of the water being recognized in favor of the individual.

Following the powers set forth above, equally broad powers are given canal officers to enter or examine land in connection with

¹² Part 10, Secs. 70-74, Act above cited.

projected works, to inspect and regulate water supply, to enforce repairs, and prevent accidents. Additional provisions are formulated providing for suitable canal crossings, the removal of obstruction to drainage, and the construction of drainage works. The Act provides further for compensation in case of damages, the remission of water rates when allowable, compensation on account of the interruption of water supply, and for further causes.

Part 4 of the Act lays down the rules for the levying of water rates, and opens by stating that "such rates shall be leviable for canal water supplied for purposes of irrigation, and for other purpose, as shall from time to time be determined by the governor and council." Special rates are fixed, to be charged where persons use water unauthorizedly; also, when water may be permitted to run to waste. Provisions are made for the obtaining of forced labor on the canals in times of emergencies, and penalties are provided for damage done to canals and to other works.

§ 117. The Burma Canal Act of 1905—The Punjab Minor Canals Act of 1905.—One of the most recent canal Acts of India is that of the Burma Canal Act No. II of 1905, and which extends to the whole of Burma, including the Shan States.¹ The preamble of this Act provides: "Whereas, throughout the Territories to which this Act extends, the Government is entitled to use and control for public purposes the water of all rivers and streams flowing in natural channels, and of all lakes and other natural collections of still water, and to assume control and undertake, in whole or in part, the maintenance of any irrigation work, upon such terms, if any, as to compensation as it deems just, whenever it appears to be necessary in the public interest to do so; and, whereas, it is expedient to amend the law relating to irrigation, navigation, and drainage in the said territories. It is hereby enacted, as follows:"— Then follow provisions, which are almost identical with those of the Northern Canal and Drainage Act of 1873, abstracted in a previous section.²

¹ Burma Act No. II of 1905, assented to by the Lieutenant Governor, Feb. 25, 1905, and by the Governor General, March 28, 1905, and pub-

lished in the *Burma Gazette* of 22d April, 1905.

² See Sec. 115.

The same power is given the local Government to declare that any waters are about to be applied to a public use,³ and, upon notice of the same, no person shall construct any "dam, weir, embankment, sluice, channel, or other work, for purposes of irrigation, without previous sanction of the collector."⁴

Another recent Act was that of the Punjab Minor Canals Act of 1905,⁵ which Act applies only to minor canals. And the Act provides that the Northern India Canal and Drainage Act, 1873, shall not apply to any canal which is included under those scheduled in the Act.⁶

§ 118. Conditions and results in India and this country compared.—Though the conditions of government and the people are so different in India from these in the western portion of the United States, where irrigation is practiced, many useful examples and lessons from the works themselves, methods of administration, and the laws governing waters may be learned from British India. Lessons can be also learned from the success or failure that has attended certain enterprises. Upon the economic side, the practice of irrigation involves the humane government of an intense and dependent population, consisting of many millions of people. These protective works involve the feeding of vast communities heretofore liable to the horrors of famine. They mean the reclamation of great tracts of land otherwise unoccupied and barren, and the creation of an enormous revenue from land rent to the Government, which is practically the sole landlord in that great empire. The physical conditions under which those in the United States must undertake irrigation enterprises are not so different from those existing in India as would first appear. Anywhere in our arid West, where irrigation works may be constructed, it is reasonable to suppose, judging from analogy between the two countries, that when a sufficient population settles below them, these works will be called upon to furnish all the water they can provide, and if carefully and properly planned

³ See Sec. 115.

Governor, April 7, 1905, and by the Governor General, May 12, 1905.

⁴ Chap. 2, Sec. 6, and Chap. 2, Sec. 12.

⁵ For the Northern India Canal and Drainage Act, see Sec. 115.

⁶ Punjab Minor Canals Act of 1905, No. III, assented to by the Lieutenant

and estimated for, should return fair interest on the original investment. In other words, any works we may construct must depend for their utilization and revenue upon immigration, as they will be constructed in a still sparsely settled country, as compared with the population of India. In order to induce immigration, people must first be convinced of the benefits and utility of irrigation. After having learned their lesson, the people of this country will find, and that, too, not before many years, that the irrigated portion of this country will be capable of supporting the most intense population, and at the same time exporting vast quantities of products to the less favored portions of the country. A few of the great canals in the Northwest Provinces and the Punjab were undertaken in districts sparsely inhabited. These canals are among those of India that have paid the largest interest on the original outlay. Within ten years from their construction the country was fully populated, although immigration was often from remote portions of India. Then, upon the other hand, irrigation works have frequently been undertaken in portions of India that were already overpopulated. They have rendered the land more fertile and sufficiently productive to support nearly double the population which it was previously capable of sustaining. This, too, has been accomplished despite the prejudices to be overcome, and the difficulties in inducing the people to make use of the water furnished, and of immigrating to other portions of the country—difficulties far greater than we would have to contend with in inducing immigration to our arid West.¹

Only the subhumid portions of India have been subjected to famine. There are large regions of the country that have a similar climate to the western portion of Kansas, the Dakotas, Nebraska,

1 A writer, in giving the history of irrigation in Bombay, concludes with the following: "A husbandman who irrigates needs to be upon his plot early and late. He must work in it at night time in some seasons. In point of fact he must live upon it. By these necessities communities have been dispersed over their fields, to enjoy more freedom, more light, and fresh air, as well as water; a better

housed people have been better occupied, better fed, and better clothed, rendered more contented, and in other ways more civilized; the whole of their life has been lifted a little by raising its material base. This has been accomplished under the very eyes of all observers, in the present generation, by means of irrigation in the Maratha country,"—3 *Irrigation Age* 178.

Oklahoma, and a portion of Texas. The famines in these regions have occurred every few years, and are the results of the country having been settled during the periods of fair rainfall. Following these good years came a season or two of minimum rainfall, when the crops were parched. It is only on account of the transportation facilities in our own subhumid West, and the extensive charities undertaken by the Government and people, on several occasions, that the settlers in the subhumid portions of our own country have been saved from famine. It is in such regions as those—the subhumid regions—that the Government of India has devoted the most time, attention, and money for the construction of irrigation works, as a means of protection against such losses; and no more convincing arguments need be made of the wisdom of this policy than their results.

CHAPTER 6.

MODERN IRRIGATION IN AUSTRALIA.

- § 119. Particular features of the country.
- § 120. The Government of Australia.
- § 121. Irrigation enterprises—Failure and success.
- § 122. Ownership and government of waters—In general.
- § 123. New South Wales—Irrigation and laws.
- § 124. South Australia and Queensland.
- § 125. Victoria—Irrigation projects in.
- § 126. Victoria—Laws and their history.
- § 127. Victoria—The Water Act of 1905—Rights in natural waters.
- § 128. Victoria—Authorities empowered to construct works—The Board of Land and Works.
- § 129. Victoria—Authorities empowered to administer works—The State Rivers and Water Supply Commission.
- § 130. The lessons to be learned from Australia.

§ 119. **Particular features of the country.**—Australia measures 2,500 miles in length from west to east, and 1,950 in breadth from north to south, and contains an area of about 3,000,000 square miles—nearly the same as that of the United States, exclusive of Alaska. Along the entire line of the east coast there extends a succession of mountain ranges, called in different parts, the Australian Grampians, the Australian Alps, and other names, with an average height of 1,500 feet above the sea, although there are peaks many thousand feet high. The rivers flowing down the eastern slope have but short courses before they reach the sea, and very few of them are more than 200 miles in length. It is different with the Murray River, which flows westward, and has a length of 1,100 miles. This river is navigable during the greater portion of the year and drains, with its tributaries, about half a million square miles. There are a number of other rivers such as the Victoria, the Roper, the Brisbane, the Fitzroy, the Glenelg, and the Swan. But this continent can not boast of a Nile, an Indus, or a Mississippi, and the interior suffers for the want of water. There are great plains of rich soil, which need only the application of water to make them productive. The climate varies greatly in different localities. The rainfall is from six to ninety inches annually. With regard to the temperature,

the northern regions of the continent being situated within the Tropic of Capricorn, resemble parts of South America and South Africa, that are situated in corresponding latitudes. The seaward districts in this respect are like Southern Europe. The mean annual temperature of Sidney is $62^{\circ} 4'$ Fahr. The inland plains, however, which suffer much from evaporation, experience a summer heat which rises to 100° Fahr. in the shade, and sometimes as high as 140° . As a general thing, the climate of Australia is arid in the extreme, and in many portions the ordinary crops can not be raised without irrigation.

§ 120. The government of Australia.—Although Australia is nominally a British province, it stands upon an entirely different footing than does either British India or British Egypt, the irrigation features of which countries we have discussed in the previous chapters.¹ In that country there are no dominant and servient peoples, but all stand upon an equality, and with as much individual freedom as do the people of the United States. In fact, as was said by the Minister of Lands of Australia, the people of the United States and that country have the same language, the same governmental machinery, and the same inherited traditions as to the rights and duties of men.

The country has its Parliament, which passes its Federal laws, and which stands in the same relation as does the Congress of the United States to this country. The country is also divided into States, each of which has its Legislature, composed of the Legislative Council and Legislative Assembly. These Parliaments are similar to the legislatures of the respective States of this country. In fact, Australia is practically a republic, having all the powers, as far as self-government is concerned, as an independent sovereign country.

§ 121. Irrigation enterprises—Failure and success.—As in many other new countries, there have been many failures of irrigation schemes in Australia, resulting from many causes. The main trouble has been, and now is, the sparse population. In many cases the "trusts" saw no more than the advantages likely to

¹ For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

For Modern Irrigation in India, see Chap. 5, Secs. 103-118.

accrue to their districts through possessing a sufficient water supply, and did not consider seriously enough the large liability they had assumed for the repayment of the principal and interest of the loans they had received from the Government, or if they did understand the position, they probably relied upon the leniency of their creditors to postpone the day of reckoning until it was quite convenient to pay up. Further, at the outset few knew anything about irrigation in a practical way, and especially were they ignorant of the large expenditures necessary to bring land into a fit state to be irrigated. Then again, the farms are too large to be owned by one man. When it is considered that the most of the land included in the trust districts is held in blocks of at least 320 acres, and that in the irrigation world 20 acres is considered a large farm for one man to take care of, it will be seen how much must be done before any considerable area could be utilized for "intensive irrigated culture." The result has been that the available water has not been made use of to anything like the extent contemplated when the schemes were first proposed.¹

Like the United States, the early States of Australia were too improvident in the distribution of their lands. Lands at first were regarded as of little value and were given away in large tracts to individuals with a mistaken generosity. The States are now endeavoring to correct this evil through the repurchase and subdivision of these estates, and through the imposition of a graduated land tax, which tends to promote subdivision of the large tracts by the owners. The later rule for the disposition of lands, especially in the State of Victoria, has been more enlightened, and it is now being disposed of in much smaller tracts. The owners of large tracts of land, as is the case in all countries where the same is allowed, have always stood out against irrigation enterprises, which would require large expense upon their part, and tend eventually to either a relinquishment or a subdivision of their lands. We have seen the same result in many portions of the Western States of this country. Irrigation

¹ In Utah the average irrigated farm is 27 acres.

Under some of the Government projects constructed under the Na-

tional Reclamation Act of the United States, the farm units are fixed as low as 10 acres. See Chap. 65.

stands for intense farming, and intense farming only goes with a small acreage. ²

§ 122. **Ownership and government of waters—In general.**—To the independent States is left the entire government of all their internal affairs. Each Australian State owns the public lands within its boundaries, and also the waters flowing or lying therein; and, therefore, the government and control of the use of waters is a State, rather than a Federal matter, and this subject is left entirely to the respective States. In Australia the public utilities are, as a rule, owned and operated by the public and for the public. The tendency is also to conserve the natural resources of the country. There are extensive forest reserves not only protecting the timber interests, but also the watersheds, and therefore protecting the flow of the streams as far as possible. ¹

The waters flowing within a State are claimed and owned by the State, and no one can take water from an Australian stream without paying for it. The charges for this service are nominal, the intention being simply to maintain the title to the water and to secure enough revenue to pay the expenses of supervision and of dividing the water in times of scarcity. No perpetual rights to water for any use are granted, and only licenses to use are granted, and the longest term of any license is fifteen years. Upon the expiration of this term a preference right is given for a renewal to the former users. Not only has Australia abrogated the common law as to riparian rights of the mother country, but it has also in all land grants reserved to itself the beds and banks of all of the streams, including a strip of land on each side of the streams of from one to three chains wide. Thus the State has become the sole riparian owner upon the streams. The State is then also in the position to say who may erect diverting works or pumps upon the banks of the streams for the diversion of the water. All power sites are protected and owned by the State, and the utilization of water power is thereby made an effective agency for the development of local industries by the people in general, rather than by the favored few. No corporation has, or can gain, under the present laws, a monop-

² For the Effect of Irrigation Upon the Individual, see Sec. 9.

¹ For Forests and Their Relation to Stream Flow, see Chap. 2, Secs. 40-62.

oly of any of the great natural resources of Australia, as is the case in many of the States of this country. These natural resources are owned by the State and are guarded and protected by it, and the right to their use is only granted under the license or lease system. Even the mineral lands are so protected, the title being retained by the State and the mines worked under a system of leases.

§ 123. New South Wales—Irrigation and laws.—The science of irrigation has not progressed as extensively or as rapidly in New South Wales as it has in the State of Victoria, discussed in subsequent sections of this chapter.¹ One reason is that they were later in passing a satisfactory law governing waters and their use, and the law now in force is defective in many respects. However, the possibilities of irrigation in this State are enormous. The rivers are large and the irrigable land extensive. However, a large irrigation project is about to be completed in that State, which is known as the Murrumbidgee project. This project, when completed, will open up 1,344,000 acres of land for settlement, and will make room for 200,000 settlers. One-fourth of this land will be irrigated and the rest used for pasture for the farmers.

In 1896, there was passed a law that is known as the Water Rights Act.² There had been a tendency upon the part of all of the

¹ For Irrigation and Laws in the State of Victoria, see Secs. 125-129.

² Whereas, it is desirable in the public interest to declare the respective rights of the crown and of riparian proprietors to the waters of rivers and lakes, and to make better provision for the conservation and supply of water and for regulating drainage: Be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the legislative council and legislative assembly of New South Wales in Parliament assembled, and by the authority of the same, as follows:

1. (I). The right to the use and flow and to the control of the water in all rivers and lakes which flow

through or past or are situated within the land of two or more occupiers, and of the water contained in or conserved by any works to which this act extends, shall, subject to the restrictions hereinafter mentioned, vest in the Crown. And in the exercise of that right the Crown, by its officers and servants, may enter any land and take such measures as may be thought fit, or as may be prescribed for the conservation and supply of such water as aforesaid, and its more equal distribution and beneficial use and its protection from pollution, and for preventing the unauthorized obstruction of rivers. For the purposes of this sub-section, "occupier" includes the Crown.

Australian States, prior to the passage of the statutory laws abstracted in this and other sections of this chapter,³ to adopt in toto the common law of England as to riparian rights. This was also true in the provinces of Victoria and New South Wales; and, therefore, the perplexities of the water users were increased. This ancient principle of the common law gives to any land owner along the margin of a stream the right to have the water flow as it was wont by Nature, undiminished in quantity and unimpaired in quality;⁴ or, at least, it renders it uncertain as to the extent to which the volume may be diminished without injury to the other riparian proprietors. This law was adopted from the mother country of these early Australian colonies, England, where, under an entirely different physical condition, this law first came into being. The Australian statute of New South Wales limited the rights of a riparian proprietor to the needed domestic pur-

(II). The right shall be subject to the following restrictions:

(a) It shall not be exercised in contravention of any right conferred on and lawfully exercisable by any person, company, corporation, or board, or under the authority of any act dealing with mining, or of any public or private statute, or of any license granted by the Crown.

(b) It shall be subject to the rights of the occupiers of land on the banks of rivers or lakes as hereinafter defined.

(c) It shall be subject to the rights of the holders of licenses under this act.

2. The occupier of land on the bank of a river or lake shall have the right to use the water then being in the river or lake for domestic purposes, and for watering cattle or other stock, or for gardens not exceeding five acres in extent used in connection with the dwelling house, and it shall not be necessary for the occupier to apply for or obtain a license for any work used solely in respect to that right. . . .

10. The license, if granted, shall in every case except Class IV, be granted for a period not exceeding 10 years (subject to the provisions of this act, with regard to the renewal of licenses and subject to such limitations and conditions as the minister may think fit to make) be renewed by the minister from time to time on the application of the person holding the license, on the payment of a fee calculated in the manner and according to the scale set forth in the schedule to this act: Provided, that no renewal shall be for a longer period than 10 years.

13. A license shall be deemed to be held by and shall operate and inure for the benefit of the lawful occupier for the time being of the land whereon the work is constructed or is proposed to be constructed.

³ See Sec. 126.

⁴ For the Doctrine of the Common Law, see Chaps. 21-28, Secs. 450-551.

For Irrigation as a Riparian Right, see Chap. 26, Secs. 489-525.

poses, the watering of stock, and for the cultivation of gardens not exceeding five acres in extent. The abrogation of the doctrine of riparian rights in these provinces was not made until after a careful study of irrigation in both Europe and America. These provinces are colonies of Great Britain, where the time-honored precedents of the mother country are supposed to be followed with greater strictness than in any other country that has adopted the common law. But after a most careful investigation, it was decided that the doctrine of riparian rights, as it was known under the common law, should have no place in a country where all the water the streams carry should be diverted and used upon the land. Hence the passage of the laws abolishing these rights.⁵

§ 124. South Australia and Queensland.—There are many irrigation projects in South Australia and Queensland, and many acres are under cultivation which are irrigated from the waters of the natural streams, and also from the flowing wells, but space will not permit us to discuss either these projects or the laws which govern them.

The principal discussion of this chapter will be confined to the State of Victoria, that State being more advanced along all lines than are any of the other States.¹

§ 125. Victoria—Irrigation projects in.—The State of Victoria is further advanced along irrigation lines than is any other Australian State, both as to the practical side of the question and as to its laws.¹ On June 30, 1907, the total cost of State works was £3,177,822, which has been very much increased since that date. Since the Water Act of 1905, the construction of these works is imposed upon the Board of Land and Works; and, after the construction has been fully completed, the jurisdiction is transferred to the State Rivers and Water Supply Commission, of which commission Mr. Elwood Mead, formerly chief of the Irrigation Investigations of the United States Depart-

⁵ Upon this subject, see the Laws of Canada, Secs. 177-237. Also, see, *Riparian Rights in the United States*, Secs. 450-551.

¹ For Irrigation and Laws in Victoria, see Secs. 125-129.

¹ For the Laws of Victoria, see Secs. 126-129.

ment of Agriculture, is at present the chairman. On the date above mentioned, there were then controlled by the commission thirty-seven separate works, besides a number of others under construction by the Board of Land and Works. And, at that time the area of lands artificially supplied with water for domestic and ordinary uses was about 10,800,000 acres. However, the degree of efficiency and completeness of the service was widely various. The total area of land actually irrigated then from these works was but 104,920 acres. This, however, is rapidly being extended, and, at the present time it is more than doubled. The number of cities and towns supplied from these works is 111.²

§ 126. **Victoria—Laws and their history.**—It was not until 1881 that the Victorian Parliament took any decisive action in the matter of irrigation and water laws, when at that time it passed an Act authorizing the formation of what are known in that country as water supply trusts, or “trusts.” These trusts are somewhat similar to the irrigation districts of our Western States, based upon the Wright Law of California, and later passed.¹ This Act was found not to be entirely satisfactory; and, after a more careful investigation of the irrigation laws and practices of the United States and some of the European countries,² in 1886, a new irrigation Act was passed. This Act provided that any district, upon application to the executive government, giving plans and full particulars of a proposed scheme of irrigation and water supply, including cost, maintenance, and probable revenue, may be constituted an irrigation trust; provided, that the opposition to the scheme in the proposed district is not greater than a specified minority; and, provided further, that the Minister and chief engineer of water supply report favorably on it. The executive part of the Government having approved of the scheme, it is then to be laid before

² See Annual Report of the State Rivers and Water-Supply Commission, 1906-07, pp. 3-6, Melbourne, Australia.

For subsequent data, see the subsequent Reports of the Commission.

¹ For the Irrigation District Laws, see Chap. 70.

² In 1885, Mr. Alfred Deakin, member of the legislative assembly, visited America for the purpose of studying irrigation in its latest application, and information was also obtained from various countries of the old and new world.

Parliament, with all data relating thereto, for its sanction. A specially authorized loan is then granted by the Government to the trust from a fund specially set apart for the purpose, to enable the necessary works to be constructed. A small rate of interest is charged and a sinking fund provided to extinguish the loan. It was also enacted that certain works may be denominated "National" works and paid for solely by the State, or "joint" works, payment being made by both State and trust, or "trust" works, for which the trust alone is responsible. These trusts are managed by commissioners elected by ballot of the rate payers in each district, who have full financial control and responsibility in connection with the undertaking, and who appoint the necessary officers for carrying out of the works and controlling the supply of water. Great facilities were thus afforded to districts in which the rainfall was deficient of obtaining an adequate supply of water. The value of this act was soon recognized, and between thirty and forty districts, or "trusts," were formed after its passage.

One of the most important features of the Act of 1886 is, that all waters of the State, including rivers, creeks, lakes, etc., were declared to be the property of the State, and to be held and controlled by it, or by the trusts appointed by the State, for the benefit of the people. It was thus that the first attack was made in Victoria upon what are known as "riparian rights," the great stumbling block to irrigation at that time in other parts of Australia, as well as to a number of the Western States of this country. But it was held by the Court, that riparian rights which had vested prior to the passage of the act were still in force, and that was also the opinion of the Crown solicitor, extracts from which opinions are quoted below.³

3 "By the general law applicable to running streams, every riparian proprietor has a right to what may be called the ordinary use of the water for his domestic purposes, and for his cattle, and this without regard to the effect which such use may have in case of a deficiency upon proprietors lower down the stream. But, further, he has a right to the use of it for any pur-

pose, or what may be deemed the extraordinary use of it, provided he does not thereby interfere with rights of the proprietors either above or below him. Subject to this condition he may dam up the stream for the purpose of a mill, or divert the water for the purpose of irrigation. But he has no right to interrupt the regular flow of the stream, if he thereby interferes

In 1890, the law of 1886 was amended in many particulars. But this law was unsatisfactory in many respects, especially upon the subject of riparian rights, and in 1899, an Act to declare and amend the laws relating to riparian rights was passed. This Act is known as the Riparian Rights Act of 1899. And in this law are defined all rights of riparian owners in the waters of the streams.⁴ But the Act of 1899 did not prove entirely satisfac-

with the lawful use of the water by any other proprietors and inflicts upon them a sensible injury."—*Miner v. Gilmour*, 12 Moore P. C. 131, 7 Week. 328.

"A riparian proprietor has the right to use all the water which he requires for domestic use, and to water his cattle, and is also entitled to take from the river for any other purpose any quantity of water which will still leave in the river a sufficiency of water to substantially enable other riparian owners lower down the stream to exercise similar rights. This riparian right is still preserved by the Act of 1886, *as to persons who had such a right at the passage of the act.*"—Opinion of John Madden, Crown solicitor, in answer to inquiry from Secretary of Mines and Water Supply.

⁴ An abstract of this law is as follows:

Whereas, it is advisable to define what are the special rights in the waters of rivers, streams, water courses, lakes, lagoons, swamps, or marshes appertaining to the ownership of lands abutting thereon, and to amend the laws relating to such rights: Be it therefore enacted by the Queen's Most Excellent Majesty, by and with the advice and consent of the legislative council and the legislative assembly of Victoria in this Parliament assembled, and by the authority of the same as follows:

Every owner of land alienated from the Crown before the 15th day of December, 1886, abutting on a river, etc., there being no reserve between such land and the bank, shall have a right to the use of the water in the river, etc., for the ordinary and domestic use of himself, and of his family and servants, and for the use of his cattle permanently depasturing on such lands.

Every such owner shall likewise have the right to take and divert water from such river, etc., for other uses on his riparian lands, provided such uses have been bona fide habitually exercised by such owner for not less than 20 years prior to the passing of the Irrigation Act of 1886.

A right to the permanent diversion or to the exclusive use or to any other than the ordinary and domestic and the use of cattle of the water in any river, etc., attaching to the ownership of any riparian lands by length of use or otherwise than under the provisions of some act of Parliament shall attach only to the riparian allotment as originally sold by the Crown and not to any other lands of the same owner. It shall not attach to any lands separated from the riparian lands by an allotment boundary or by a public road, or to any land distant more than one mile from the bank in respect of which the right accrues.

Any owner of such land claiming to have the right to take and divert water

tory. What was wanted in Victoria was a law vesting in the State the entire title to the waters flowing within its boundaries, and also giving the State the entire supervision and control of all the uses made of such waters. And it was not until December 12, 1905, that such an Act was passed. This Act is now the present law in the State of Victoria, with some slight amendments, and will be discussed in the following sections.⁵

from any river, etc., on the ground of his having exercised such use for not less than 20 years prior to the passing of the Act of 1886, shall register his claim to such right within 12 months from the passing of this act.

It shall be competent for the Crown or for any land owner or for anybody or person to challenge such claim and to have an issue tried at law to settle the same.

All claims not registered within 12 months shall absolutely lapse.

Except as hereinafter expressly provided, the water at any time in any river, stream, water course, lake, lagoon, swamp, or marsh shall be, and the same is hereby, *declared to be absolutely the property of the Crown and inalienable, and the right to the use of all such water shall in every case be deemed to be vested in the Crown.*

Where any river, etc., forms the boundary of an allotment of land alienated by the Crown, *the bed and banks thereof shall be deemed to have remained in the Crown and not to have passed to the land owner.*

Except as herein expressly provided, or except under the provisions of some act of Parliament, no person shall divert or appropriate any water from any river, etc., except in the exercise of the general right of all persons to use water for domestic and ordinary use and for the use of cattle from

any river, etc., vested in the Crown, and to which there is access by a public road or reserve.

After the passing of this act no right to the permanent diversion or to the exclusive use of the water in any river, etc., and no right to take and divert such water for use on any riparian land other than the ordinary and domestic use of the owner and of his family and servants and of his cattle permanently depasturing thereon shall be acquired by any riparian owner or of any other person by length of use or otherwise as the same may be acquired or conferred under the provisions of some Act of Parliament. And no such right shall be deemed to have been acquired otherwise than as aforesaid since the passing of the Irrigation Act of 1886, notwithstanding the repeal of said act.

A provision to entitle the Crown, by the minister of water supply or his officers, to interfere summarily to prevent the undue, excessive or illegal diversion of water from any river, etc., and to lay on the person or body diverting, whether private land owner, trust, or other body or person, the onus of appealing against such interference and not on the Crown, and the onus of applying for an injunction or other process to restrain it or him.

⁵ See Secs. 127-129.

§ 127. **Victoria—The Water Act of 1905—Rights in natural waters.**—The “Water Act, 1905,” passed by the Victorian Parliament in that year, is entitled: “An Act to consolidate and amend the laws relating to the conservation and supply of water to declare the law relating to certain rights in natural waters the property in the beds and banks containing the same and for other purposes.”¹

In Part II of the Act, the rights defined in natural waters are divided into two divisions, as follows:

Division I. Respecting Rights of the Crown and of Private Persons.

Sec. 4. “The right to the use and flow and to the control of the water at any time in any river creek stream or water course and in any lake lagoon swamp or marsh shall be subject only to the restrictions hereinafter provided and until appropriated under the sanction of this Act or of some existing or future Act of Parliament vests in the Crown.”²

This section shall not operate so as to prevent any person from draining any land; provided, that the flow of water in any river, etc., is not thereby sensibly diminished.

Sec. 5. “Where any river creek stream or water course or any lake forms the boundary or part of the boundary of an allotment of land heretofore alienated by the Crown the bed and banks thereof shall be deemed to have remained the property of the Crown and not to have passed with the land so alienated.”

Where such river, etc., forms the boundary of land hereafter alienated, the bed and banks thereof shall, notwithstanding such alienation, remain the property of the Crown and shall not pass with the land so alienated, even if one person owns on both sides of a stream.

Sec. 6. Except as in the Act provided, or under some future Act, “No person shall divert or appropriate any water from any river creek stream or water course or from any lake lagoon

¹ Water Act, 1905, 12th December, 1905, No. 2016.

For definitions of terms used in the act, see Sec. 3, among which are found the following: “Board” means the Board of Land and Works. “Commission” means the State Rivers and Water-Supply Commission. “Irriga-

tion” means any method of causing water from a stream or channel to flow upon and spread over land for the purpose of tillage or improvement of pasture or of applying water to the surface of land for the like purposes.

² It will be noticed that throughout the act no commas are used.

swamp or marsh save in the exercise of the general right of all persons to take water for domestic and ordinary use and for watering cattle or other stock from any river," etc., "and to which there is access by a public road or reserve."

Notwithstanding the provisions of the Act as to the title, the owner of land adjacent to a water course may have access to the bed or banks of the same for grazing and to have a remedy for trespass thereon by others.

Sec. 8. No right to take and divert any of such waters shall be acquired by any owner of such land by length of use or otherwise than the same may be acquired under the provisions of the Act or of some existing or future Act.

It is made unlawful to obstruct a water course, "and any person who, being an occupier of any land conveyed as aforesaid, shall continue, or fail to remove, any such obstruction or interference shall be guilty of an offense against this Act on every day during which such obstruction or interference shall be continued or not removed after notice in writing to discontinue or to remove the same shall have been given by any Crown lands bailiff to such occupier."

Sec. 10. The pollution of the water in water courses and lakes is made an offense, but the rights granted under the Mines Act of 1904 shall not be interfered with.

Sec. 11. The right of entry is given the Crown to prevent the interference with a water course; obstructing an officer is made an offense, and compensation for injury provided for.

Sec. 12. The owner of adjacent land to any water course may have permission to protect his land from damage by erosion or flooding.

Sec. 13. The Commission is given the power to institute all proceedings for the protection of the rights of the Crown in and to such waters, and for the recovery and enforcement of any penalty; "and in such proceedings it shall not be necessary for the Commission to show that either the Crown or the Commission has sustained any damage by such illegal diversion or taking or pollution of water or unlawful interference with such beds or banks," etc.

Sec. 14. Riparian rights of owners adjacent to water courses are defined and limited to the ordinary use of themselves and of

their respective families, free of charge, and for watering cattle or other stock; "and shall have a further right to such water for the irrigation of a garden not exceeding three acres in extent being part of such land and used in connection with a dwelling."

Secs. 15-23. Certain riparian owners who have diverted the waters not less than for 20 years prior to the 15th day of December, 1886, may apply for a special license to continue the use of the water to the extent mentioned in the last section, under the proceedings prescribed in these sections and under the rules and regulations also provided for.

Division 2. Control of Water Courses, Lakes, etc., Affected by State Works.

Sec. 24. The conditions for the exercise of certain rights of the owners of lands adjoining the banks of streams which may be supplied wholly or in part from State works are prescribed. After the construction of such State works such person shall be entitled in virtue of such right to use only so much water as would be equal to the quantity of waters of the water course which would be available to him and to which he would be lawfully entitled but for the existence of such State works; but in no case shall he be entitled to a greater quantity of water than 4,000 gallons per day for domestic and ordinary use and for watering cattle or other stock in respect of every mile of frontage on such stream, and for the irrigation of a garden not to exceed three acres in extent being a part of the land adjoining the banks of the stream and used in connection with a dwelling.

Regulations for this use may be made by the Governor in Council from time to time, such regulations to be published in the official gazette. Penalties not exceeding £50 may be imposed by such regulations for any breach of the regulations made hereunder.

It can be readily seen from the above that the ownership of all the waters flowing or lying within the State of Victoria is in the State. That the State is also given the absolute control of the same; and that the common law riparian rights are effectually disposed of by the State owning the beds and banks of the streams; but that certain rights are granted to those who own lands "adjoining the banks" to the use of a certain limited and specified quantity of water under a definite license and under regulations

prescribed, and that, too, whether the streams are supplied naturally or from State works.

§ 128. Victoria—Authorities empowered to construct works—The Board of Land and Works.—Secs. 25-27. The authority is given the Board of Land and Works to construct and complete all such irrigation works as may from time to time by any Act of Parliament be directed to be constructed as State works of water supply or drainage, except extensions, improvements, renewals, and substitutions and works directed by any Act of Parliament to be carried out by the Commission. "Whenever the board and the chief engineer of the Department of Water Supply certify in council that any works so constructed by the board are completed the Governor in Council may make an order transferring such works to the Commission; and thereupon such works together with the lands over or upon which they have been constructed and the inheritance thereof in fee simple and the absolute property in all water at any time in or upon such works or lands shall become vested in and shall be held by and remain under the sole control and management of the Commission for the purposes of the act."

The works uncompleted at the time of the passage of the Act should also be finished by the board and afterwards be turned over to the Commission, under similar proceedings and with the same effect as above specified.

§ 129. Victoria—Authorities empowered to administer works—The State Rivers and Water Supply Commission.—Upon the State Rivers and Water Supply Commission, as designated in the Water Act, 1905, of the State of Victoria, is devolved the power and duty to administer all works which have been turned over to it by the Board of Land and Works,¹ as completed, and also the power and duty to supervise, regulate, and control all the uses of the waters taken through or by the means of such works, as follows:

Sec. 28. The Commission created by the act is composed of "three fit and proper persons," to be appointed by the Governor in Council, and one of such persons to be appointed as chairman. The Commission is a body corporate, and has a perpetual succes-

¹ See preceding Sec., No. 128.

sion and a common seal, and is capable in law of suing and being sued, and is also given the power to take, purchase, lease, hold, exchange, and sell lands, tenements and hereditaments, goods, chattels, and other property for the purposes and subject to the provisions of the act.

Sec. 29. The commissioners shall not engage in other employment without the sanction of the Governor in Council. The chairman shall receive a clear annual salary not exceeding £1,200, and each of the other two a clear annual salary not exceeding £800; such salaries to be determined by the Governor in Council.

Secs. 30-35. The term of office of the commissioners is five years. Any commissioner may be removed for cause, and an acting commissioner be appointed. Any two commissioners shall form a quorum, and the chairman, if present, shall preside at all meetings.

Secs. 36, 37. All State works are to be vested in the Commission as prescribed by the act.

Secs. 38-49. The powers and duties of the Commission are definitely prescribed. All extensions of works to be carried out by the Commission. Contracts may be entered into for the construction of works. However, no contract made by the Commission the consideration of which exceeds £1,000 or the performance of which may extend over a period of one year shall have any force or effect unless sanctioned by the Governor in Council. The Commission may from time to time appoint or remove officers and employees. The funds for the current expenses of the Commission to be provided for by Parliament. All moneys collected by the Commission to be paid to the public account. As soon after the 30th day of June in each year the Commission shall prepare a full report, statement, and estimates. Such annual report shall be laid before both Houses of Parliament in the month of September in each year.

Secs. 50-59. From and after the commencement of the Act, the lands included in the area heretofore under the jurisdiction and control of each of the irrigation and water supply trusts,² as designated in schedule 4 of the Act, shall be and become an irrigation and water supply district; and the commissioners of each of such trusts shall thereupon go out of office and the corporation shall be

² For Water Trusts, see Sec. 126.

dissolved. The Commission is to be debited with the cost of such works, and have, thereafter, jurisdiction over them. Such districts are to have their supply of water. New irrigation and water supply districts may be created; the orders constituting new districts to state full particulars, and such new districts shall also receive water. The Governor in Council, on the recommendation of the commission, may at any time make an order altering the boundaries of such districts, or combining one or two districts into one; all such districts to come under the jurisdiction of the Commission. The inclusion of a water works district in an irrigation and water supply district has the effect of abolishing the local authorities and placing full jurisdiction in the Commission. The register of lands to be prepared and revised at intervals not exceeding 15 years; and the water apportionment to the lands in such districts may be amended at the time of the revision of the register; such register to be open for public inspection. Any occupier or owner of land in any such irrigation and water district being dissatisfied with the description or classification of any land in such register, or with the apportionment of water right to any land, may, within 30 days from the publication of such register or revised register, appeal to a police magistrate sitting in the court of petty sessions held nearest to such land, under the proceedings prescribed. Such appeal must be heard by the court, "and the decision of the police magistrate shall be final and shall not be set aside reversed altered or varied by any court upon any ground whatsoever." If there appears, however, to be just cause for relief the court may amend the register of lands or the apportionment of water rights in such manner as the court may think necessary.

Secs. 60, 61. All occupiers or owners of land on the register shall be entitled to a supply of water for domestic use and for cattle. After supplying for such use, the surplus water is to be apportioned for irrigation by the Commission, which has absolute authority in this respect.

Secs. 62-67. A general water rate is to be charged on all lands, but less on lands distant from the works. The Commission has the power to provide by-laws for the making and levying of all water rates. Full proceedings are also provided for the collection of such water rates.

Division 3 of the act relates to the water works trusts for furnishing water to municipalities and their government, which subject is unnecessary to discuss here.

Part IV relates to the subject of the supply of water: Division 1—In general; Division 2—Supply of water in urban districts; Division 3—Pumping, leases, licenses, etc.

Part V relates to claims for compensation: Division 1—Compensation for lands taken for works or undertakings; Division 2—Compensation for injury by works.

Part VI provides for urban districts: Division 1—In general; Division 2—By-laws in urban districts; Division 3—Offenses in urban districts; Division 4—Pollution of water for supply of urban districts; Division 5—Rates for urban districts.

Part VII provides for loans to water works trusts and to local governing bodies.

Part VIII relates to general provisions: Division 1—Powers and property of authorities; Division 2—By-laws; Division 3—Rates and charges; Division 4—Offenses and penalties; Division 5—Legal proceedings and enforcement of the act.

Part IX relates to miscellaneous provisions.

Then follows the schedules Nos. 1-19.

Neither time nor space will permit a further discussion of the above provisions.

§ 130. The lessons to be learned from Australia.—The lessons to be learned in Australia by the American irrigators are many, and especially in the State of Victoria.¹ First and foremost, we find an English colony practically abrogating the common law of the mother country, by becoming the sole riparian owner itself upon the banks of all streams and other bodies of water and turning around and granting to the owners of lands "adjoining the banks" of such streams the right to the use of a certain quantity of water for certain limited and definite purposes, which purposes are in the nature of sustaining life. Then we have the declaration declaring all waters within the State at all times to be the property of the State, thus paving the way for the absolute State control provided for by the Victorian Water Act, 1905. The Victorian Government says to the farmer: "We will construct your

¹ For Victoria, see Secs. 125-129.

irrigation works; we will furnish you with water; and you, upon your part, must pay us a small compensation for the water and comply with the laws and regulations relative to the use of the same." We understand that more recently than the Water Act of 1905, the Australian States have made further inducements for settlers to come and settle upon their vacant lands now supplied with water for irrigation under these State works. The States will loan the settlers money to get a start; and, in some instances construct their houses and other necessary buildings, so that the ordinary hardships of the pioneer settlers are thus avoided.² Also teams and farm machinery will be loaned the settlers upon the start, and seeds will be furnished. In short, the scheme bears about the same relation to the pioneering ways of this country as the Pullman car bears to the prairie schooner. The question may be asked, and with reason, is this not making it too easy for the Australian settler? With all these things given him to start, will he turn out to be the hardy, rugged, independent, self-reliant citizen, the type of which we find thousands in the Western States of this country? It is adversity and having to fight for an existence that has made the type of rugged manhood which inhabits these Western States. We may also learn many lessons upon the subjects of the construction of irrigation works by the States, or by the Federal Government, and the regulation and distribution of the waters therefrom to the consumers. Australia has done in the history of her irrigation practice what the Western States of this country should have done; or, rather, what our Federal Government should have done many years ago—it being then the owner of all of the public lands. And that is, it has fixed the status of the ownership in and to waters, and has prescribed the exact conditions under which the water may be used. In our own country this was originally left largely to the individual. And by this means, enormous profit-making corporations have sprung up which own and distribute much of our waters; endless litigation has been and is being caused; and at all times the rights of the consumers are more or less unsettled. And, strange as it may seem, Australia learned many lessons from the conditions in this country. In turn, it is not too late for us to learn many lessons from Australia, especially as

² These Acts are not before us.

to the utter abrogation of all riparian rights in the irrigated regions; or, at least to limit such rights to the flow of streams to the quantity of water that the riparian owner actually applies to a beneficial use or purpose. Just why we, in this country, should be so tied to precedents which sprung from the Island of England, under entirely different physical conditions, when the English colonies themselves, and the English Government itself in India and Egypt, entirely repudiate them, I have never been able to understand.

CHAPTER 7.

MODERN IRRIGATION IN SOUTH AFRICA.

- § 131. Particular features of the country.
- § 132. The Government of the Cape of Good Hope.
- § 133. Irrigation and irrigation projects in the Cape of Good Hope.
- § 134. Irrigation Act, 1906—Preliminary.
- § 135. Irrigation Act, 1906—Divisions of—Criticism.
- § 136. Irrigation Act, 1906—Utilization of streams.
- § 137. River districts and boards.
- § 138. Irrigation districts and boards.
- § 139. Water Courts.
- § 140. Expropriation of land and acquisition of servitudes.
- § 141. Irrigation loans, subsidies, and grants in aid.
- § 142. General provisions of the Irrigation Act, 1906.
- § 143. Lessons to be learned from the colony of the Cape of Good Hope.

§ 131. **Particular features of the country.**—There is another English Colony of which little is known concerning their irrigation practice in this part of the world, and that is the Cape of Good Hope in South Africa. As surprising as it may seem to some, the practice of irrigation in that country is already being carried on to a great extent, and the use of water for that purpose has been reduced to such a system, both in the matter of laws regulating the same and by practice, that it is equaled by no other country so young in the practice. With the usual activity of English colonists, when they are turned loose from the mother country, these settlers have taken every possible advantage of their situation in this as well as other enterprises.

The country rises from the sea by a series of terraces, of which the supporting walls are nearly parallel chains of rugged mountains rising to the central and highest range, which divides the drainage of the coastal streams from that of the inner tributaries of the Orange River in the north. The streams of the outer watershed are constant only in the extreme east of the country; toward the southwest and on the Atlantic coast their supply is very irregular. All partake at times of mountain torrents, being low and feeble for the greater portion of the year, but swollen and rapid during the rainy season. These streams are all small, few being navigable, and then but for a short distance from their mouths. The

Orange River, to which the inner shed drains, is longer. It rises in the Drakenberg, and flows westward for about 900 miles to the Atlantic. Its basin includes an area of upwards of 400,000 square miles. Even this river is not navigable except for a few miles above its mouth.

Nearly two-thirds of the surface of the country consists of vast arid plains, covered, however, with rich soil which only requires irrigation to render it a great agricultural region. There are vast quantities of water running to waste during the rainy seasons, but afterwards the country is naturally left dry and barren. There are, however, great opportunities for the storage of the flood water, and one of the first things that is requisite of every settlement in the interior is the formation of a reservoir for the collection and saving of a water supply.

§ 132. The Government of the Cape of Good Hope.—The Government of the Cape of Good Hope is similar in many respects to that of the Australian States discussed in a previous section.¹ It has its Governor and Parliament, consisting of the Legislative Council and the House of Assembly, the members of which are elective. This Parliament has full power to pass such laws governing the internal affairs of the country as it sees fit. The tendency during recent years is to conserve all the natural resources of the country. There are extensive forest reserves created by Acts of Parliament, which both tend to conserve the timber supply, and protect the watersheds, thereby regulating the stream flow.² Irrigation laws and laws regulating the uses of water have also been passed, the Irrigation Act, 1906, being the latest and the one now in force. This act will be discussed in subsequent sections of the chapter.³

§ 133. Irrigation and irrigation projects—Cape of Good Hope.—Prior to the Boer War, on the south side of the equator, in

¹ See Sec. 120.

² For Forests and Their Relation to Stream Flow, see Chap. 2, Secs. 40-62.

³ See Secs. 134-142.

For information upon the subject of Irrigation in Cape of Good Hope, see Irrigation Act, 1906, No. 32, assented

to Aug. 21, 1906; The Annual Reports of the Director of Irrigation of Africa; The Annual Reports of the Engineer-in-Chief of Public Works of Cape of Good Hope, Cape Town, Africa; The Annual Reports of the Chief Inspector of Public Works of

Africa, there was very little done in the way of irrigation, although in Cape Colony efforts had been made. Since the war a number of irrigation enterprises have been started, storage works constructed, and canals built. The most important is Van Wyck's Vley. Here a large reservoir has been constructed and a considerable tract of land brought under irrigation. Other enterprises are also under headway, and before many years a large portion of the irrigable land will be brought under cultivation.

In the Transvaal, under the Boer rule, practically nothing was done, in the way of irrigation development. But since the war things have changed. Large enterprises have been started by English and other capitalists, and it will not be many years before this country will be looked to, not only to supply their own needs but also to supply fruits and grains to Europe. As the seasons are the reverse of those of England, and of all the countries which supply England's markets, South Africa can always be sure of an ample market without competition. High-class delicate fruits can be put on the London market within fifteen days from Cape Colony, and at a reasonable cost of transportation.

The whole country is dependent upon irrigation, and the condition of the rainfall and opportunities for storage are such as to indicate that irrigation will be very successful. All the local, colonial, and State Governments are actively interested in the subject. The Cape Government constructs the irrigation works, and having recouped the cost by the sale of its own lands served by the works, turns them over for use to the owners of the lands. It also subsidizes or encourages private irrigation enterprises in several ways, but it regulates and controls all works and the water, and there is no such thing as the unlicensed, unrestricted grabbing of water, which in the United States has done so much to prevent irrigation development.

As is the case in all new countries, where the opportunity is given, irrigation started in South Africa by the individual farmers, in a small way; and, afterwards, its operations were enlarged by

Cape of Good Hope, Cape Town, Africa; Memorandum on the Irrigation Act No. 32 of 1906, by C. Reynolds, for Secretary for Public Works, Cape of Good Hope, Cape Town, Af-

Cape Town, Africa; see, also, the various regulations issued by the Office of the Commissioner of Public Works, Cape Town, Africa.

groups or associations of farmers. The Government, from time to time had passed laws regulating the use of waters, but these were not very effective until the Irrigation Act, 1905. In the meantime laws were also enacted authorizing the Government to construct some of the irrigation works, and some small works were constructed. According to the report of the Director of Irrigation for the two years ending December 31, 1905, there were three projects owned by the Government, one of which had cost the Government £21,809 and total receipts from the same work to the end of the year 1904-5 had been £10,580.¹ In 1906, the Buchu-berg Irrigation Scheme was approved by Parliament, having an estimated cost of £33,375.²

But, according to the annual reports of the Director of Irrigation of the Cape of Good Hope, the great majority of the irrigation works throughout the country were either constructed by private individuals or companies, or district organizations, modeled somewhat after our irrigation districts in many of the Western States in this country.³

It has been the policy of the Government up to the present time rather than invest large sums of money in the construction of irrigation enterprises and wait for the lands to be settled up before there are any great returns from the investment, to loan money to either private parties, companies, or irrigation districts, for this purpose. And, for this purpose, a loan fund is created, and under the authority of the law, loaned out as occasion may require and the enterprises warrant.⁴

§ 134. Irrigation Act, 1906—Preliminary.—Under this part of the Act provision is made for the repeal of previous irrigation Acts, and for all regulations issued under such Acts to remain in full force and effect until revoked or replaced by regulations under this Act.

Definitions were also given of the terms used in the Act, including perennial and intermittent streams, which are defined as follows:

¹ Report, pp. 10-12.

See, also, the Report of the Director of Irrigation for the year ending Dec. 31, 1906, pp. 5, 6.

² See Report of the Director of Ir-

rigation for the year ending Dec. 31, 1907, pp. 35, 36, Secs. 103-106.

³ For the Irrigation District Laws, see Chap. 70.

⁴ For Irrigation Loans, see Sec. 141.

“ ‘Perennial stream’ means a natural stream which in ordinary seasons flows for the greater part of the year in a known and defined channel, and the water whereof is capable of being applied to the common use of the riparian proprietors. Provided, that a stream which in part only of its course satisfies these conditions shall be deemed to be a perennial stream in so far as regards such part.”

“ ‘Intermittent stream’ means a stream which is not a perennial stream, and into which the natural surface drainage waters flow from the lands of more than one riparian property. Provided that a stream shall not be deemed to be an intermittent stream above the highest point of its course at which the natural surface drainage waters from the lands of more than one riparian property unite, or for such lower portions of its course as satisfy the conditions of a perennial stream.”

The above definitions are given for the reason that the two classes of streams are treated differently under the law and the regulations thereunder.¹

§ 135. **Irrigation Act, 1906—Divisions of—Criticism.**—By the Act of August 21, 1906, of the Cape of Good Hope Parliament,¹ entitled “An Act to consolidate and amend the law relating to irrigation and the utilization of streams,” a very effective irrigation law was passed, with one exception. The main object of the Act was to consolidate, with such amendments as experience had proved necessary, the statutory laws relating to irrigation.

The Act is divided into eight parts, as follows: Part I—Preliminary; II—Utilization of streams; III—River districts and boards; IV—Irrigation districts and boards; V—Water courts; VI—Servitudes; VII—Irrigation loans; VIII—General provisions. These subjects will be discussed in the above order in the following sections.²

The principal fault that we find with this law is that it upholds the common law of riparian rights. This defect may not be so apparent at the present time, while the population of the country is comparatively sparse. But, later, as the population increases and the demand for water increases correspondingly, it will be

¹ Secs. 1-3, Irrigation Act, 1906.

¹ Act No. 32 of 1906.

² See Secs. 136-142.

found that this feature will greatly impede the growth and progress of the country. The best laws of the world upon this subject provide that the measure to the right to water is the quantity actually applied to some beneficial use or purpose, and that, too, regardless of the fact as to whether the right is based upon riparian ownership or by actual diversion and use.

§ 136. Irrigation Act, 1906—Utilization of streams.—This part of the act deals principally with the use of water of perennial and intermittent streams.

Sec. 4. Every person is entitled to the exclusive use and enjoyment of all water rising on his own land. A lower riparian owner is entitled to a reasonable share of the water, rising on the land of an upper proprietor, which flows for the greater part of the year beyond his land, and has for a period of at least 30 years been used by the lower owner.

Sec. 5. Water that falls on, or natural surface drainage water that flows on to, any land shall be the sole and undisputed property of the owner of such land, until it leaves such land or joins some stream on such land.

Sec. 6. "Every riparian owner is, subject to all existing rights of other persons and to the provisions of this act, entitled to a reasonable use for purposes of irrigation of the water of a perennial stream with reference to which his property is riparian. Provided that nothing in this section shall affect the right of a riparian owner to the reasonable use of the water of such stream for domestic and drinking purposes."

Sec. 7. "Subject to the existing rights of others, every riparian proprietor is entitled to use the water of an intermittent stream flowing on to or over his property, by diverting it on to his riparian land for the irrigation thereof;" and he shall, moreover, be entitled to impound and store such water for said purpose and for other useful purposes; provided, however, that any lower proprietor may apply to the Water Court for an order declaring the quantity of water which each upper proprietor requires for such purposes, and upon such order it shall be unlawful to impound any greater quantity.¹

¹ For Water Courts, see Sec. 139.

Sec. 8 is a saving section for those who had acquired rights prior to the act.

Sec. 9. The Water Court is entitled to grant permits for the use of surplus water on non-riparian lands; and no person shall interfere with the use of such water as is authorized by such permit.

Sec. 10. The diversion of surplus water of perennial streams, if all the water can not be utilized within their catchment area, may be diverted across the watershed to other lands; provided that the rights of riparian proprietors are not interfered with.

Sec. 11. The point of diversion, the line of passage, is to be determined by the Water Court, which is also to determine the compensation for rights of way.

Secs. 12-14 provide for the rights of riparian proprietors where streams change their courses, accretions, and the diversions from natural causes.

Sec. 15 provides for surveys and investigations.

§ 137. River districts and boards.—By Part III of the Act, “River Districts” and “River Boards” are provided for, and the supervision and distribution of the water of rivers and streams provided for by local elective boards, assisted in technical matters by professional advice, provided at the cost of the Government. These river boards are for the local management and distribution of the waters claimed by riparian owners only, and their organization is something on the order of the irrigation districts of our Western States,¹ and something on the order of the “Irrigation Districts and Boards,” relating to rights other than riparian, of Cape of Good Hope, and discussed in the next section.²

Sec. 16. “Any three or more riparian owners who, being entitled to the use of the water of any stream or streams, deem it expedient that there should be a combined system of control over such stream or streams, may present a petition to the minister³ praying that an area containing the stream or streams, together with the properties riparian thereto, may be constituted a river district:” Provided that the persons signing must be owners of not less than one-tenth of such riparian land.

¹ For Irrigation Districts, see Chap. 70.

² See Sec. 138.

³ The minister to whom the Governor has assigned the administration of the Act.

Secs. 17, 18. The minister must cause an inquiry to be made by an engineer, and a report thereon. If such are in favor of the creation of such district, the governor is given the power to proclaim the area to be a river district, and fix its boundaries.

Secs. 19-27. The management of such district is vested in a board, which shall be a body corporate and shall have such name as may be given it by the proclamation; and by that name shall sue and be sued, hold property, and have perpetual succession and a common seal. The basis of voting is fixed upon the ratable area and property valuation. A list of such voters must be prepared and annually revised.

Sec. 28. The powers and duties of the board are prescribed as follows: To execute general supervision over the streams in the district; to assist the minister in giving effect within the district to the provisions of the Act; to investigate and record the quantity or share of water which, at different stages of flow in every stream in the district, every person is entitled to; to supervise the distribution and use of water from the streams in the district in accordance with established rights.

Appeal may be had from any order of the board to the Water Court. Special investigating boards may be appointed to investigate the acts of a common river board. Vested rights must not be interfered with. The governor may nominate an engineer to assist a board. A schedule of the ratable area of each property within the district must be prepared. Rates may be levied for the required expenses, and collected. Each river board is given the power to make regulations not inconsistent with the provisions of the Act; all such regulations must be proclaimed by the Governor.

§ 138. **Irrigation districts and boards.**—Similar in organization and powers to those of river districts and boards, discussed in the preceding section,¹ are the "Irrigation District and Boards," also provided for by Part IV of the Irrigation Act, 1906, only such irrigation districts are not limited to the rights of riparian owners or riparian lands. These organizations are also similar in many respects to the irrigation districts of many of our Western States.²

¹ See Sec. 137.

² For Irrigation District Laws, see Chap. 70.

These irrigation districts are given the power to raise by way of loans any money that is required by the board for the purposes of the Act. Assessments may be levied ratably and collected for the payment of expenses of construction and maintenance of works.³

§ 139. Water Courts.—One of the novel features of the Cape of Good Hope Irrigation Act, 1906, is contained in Part V and provides for the creation and jurisdiction of Water Courts.

Secs. 64-66. "The governor may appoint in any area a court, to be called a Water Court, for the purpose of hearing and determining disputes in connection with the use and appropriation of water, and for such other purposes as may be assigned to it by this Act, and such area shall be called a Water Court District; and the governor may prescribe, and from time to time alter or amend, the boundaries of any such district." "A Water Court shall consist of a resident magistrate, having jurisdiction over the whole or some portion of the Water Court District, who shall sit with two assessors selected from a list of Water Court assessors, not less than ten or more than 25 in number, appointed for the district by the governor, after consulting with the Divisional Council of every division any part of which is situated in the district." The qualifications of assessors to be so appointed are then prescribed. "Special Water Courts" are provided for, when any matter in dispute relates to two or more separate Water Court Districts; said court to consist of a resident magistrate and two assessors for each Water Court District, appointed and selected in the same manner as above.

Secs. 67-69. The general powers and duties of a Water Court are prescribed as follows: (a) On the application of any person as to a matter in dispute regarding the use, diversion, or appropriation of water within the district, or as to any matter which by the Act can be brought by such person before such court, to investigate and make order thereon.

(b) On the application of any interested person, to investigate, define, and record the rights to the use of water of any stream, or other source of supply, and to apportion the water for irrigation or other purposes, where such rights have not been defined

³ See part IV of the Irrigation Act, 1906, Secs. 43-63.

or such apportionment made by a competent court, or by arbitration or agreement or in other legal manner.

(c) At the request of the minister or any superior court to report to such minister or court on the use or waste of water, diverted from any stream, or on any matter arising out of the provisions of this Act.

(d) To grant in accordance with the regulations, permits for the use of the water of any intermittent stream in the district.

(e) On application of an owner of land riparian to a stream to determine and fix in accordance with regulations the place or places, either upon said land or upon any land higher up in the course of the stream, at which such owner shall be deemed to have a right to the use of the water, and to determine, if required, the nature and extent of such use at such place or places, having due regard to the rights of others; and at that place or places the owner shall be entitled to divert and make use of the water as the court has determined, or as he may be entitled to by virtue of his riparian ownership, or any agreement, servitude or order of a competent court. Notice of the application shall be given to every owner of riparian land between that of the applicant and the place or places which it is proposed to fix, and such owners shall be entitled to appear before and be heard by the court upon the application.

(f) On application of any person for the removal of or interference with any dam, weir, or other obstruction in the course of a stream, to investigate the application and make order thereon, including, if the application is granted, the compensation, if any, to be paid to any person affected by the order.

(g) Generally, to do any matter or thing in the Act provided to be done by such court.

(h) On the application of any interested person, made in manner prescribed by regulations, to investigate, decide, and record, in the case of any stream, whose character has not already been defined by a competent court, whether such stream is perennial or intermittent, provided that an appeal, to be prosecuted within three months, shall be from any such decision of a Water Court to a Superior Court at the instance of an interested person.

Save with the consent of all parties in dispute as to water rights, no court other than a Water Court shall have original jurisdiction

in the hearing and settlement of such dispute; and any order of such court shall be binding on the parties unless and until set aside on appeal.

Sec. 70. Any person aggrieved by the order of the Water Court may appeal to the Supreme Court to set it aside or vary it; such appeal must be made within three months. The Supreme Court may make such final order upon appeal as it deems proper. If the time has lapsed within which to take the appeal, or if the Supreme Court dismisses the appeal, the order of the Water Court shall be final and binding upon all parties concerned.

Secs. 72-80. An agreement to accept the decision of a Water Court is final, and will not be subject to appeal or review by any court. The order of the court must be registered. A Water Court may refer any point of law to the Supreme Court, and must thereafter be guided by its decision. If an action with regard to water rights be brought in any Superior Court, such court may refer all or any of the issues to the Water Court, which shall hear the evidence and report to the Superior Court its findings thereon. Contempt of the Water Court may be punished.

Sec. 81. The Governor may proclaim regulations prescribing, defining, and regulating the procedure and practice in water courts, and the duties of their members.

§ 140. Expropriation of land and acquisition of servitudes.—Under Part VI of the Irrigation Act, 1906,¹ lands and rights of way may be acquired for the construction of irrigation works.

Secs. 82-85. Land may be expropriated under certain restrictions for a State irrigation work, or within an irrigation district, for the work of an irrigation board. Land may not, however, be expropriated for private irrigation works. It shall not be lawful for any board to interfere with any works, otherwise than with the consent of the owner, until their right to do so has been determined by the water court of the district,² and until compensation has been made to all parties for the injury occasioned.

Secs. 86-98. Any person having the right to water or to the use of water, is entitled to claim under the Act the following servitudes temporarily or in perpetuity, namely: (a) Servitude of aque-

¹ Secs. 82-97.

² For Water Courts, see Sec. 139.

duct, consisting of the ordinary rights of way for ditches and canals; (b) servitude of storage, consisting of the right to occupy, by flooding with water the land of another; (c) servitude of abutment, consisting of the right to occupy by dam or weir the bed of a river and the banks adjacent thereto, the property of another.

A claimant to any of these servitudes must give notice, in writing, to the owner of the land; and, if the owner does not within one month agree to the proposals of the claimant, the claimant may apply to the water court for the settlement of the matters in dispute. The water court may grant the application subject to such conditions as it deems equitable, and award compensation to be paid. Specific rules are prescribed as to what and how the damages shall be assessed. A servitude lapses if the work proposed to be executed is not completed and the water utilized within three years from the date of the order or of the period fixed by the water court.

§ 141. Irrigation loans, subsidies, and grants in aid.—The State of the Cape of Good Hope provides a loan fund in aid for the construction of the works of irrigation projects.

Part VII of the Irrigation Act, 1906, provides¹ how loans may be granted to irrigation boards or to private owners of land, as follows:

Secs. 99-101. An owner or irrigation board desiring to raise money on loan for the construction of irrigation or drainage works may make application to the Minister, stating the purpose for which the loan is required, the nature of the proposed works, the estimated cost of construction, the position and extent of the land to be irrigated or drained, the extent to which the value of the land will be enhanced by the work, and

(a) If the applicant is an owner, the nature and value of the property offered as security, and the extent to and the amount for which the property has already been hypothecated, or

(b) If the applicant is an irrigation board, the extent to which the rates leviable by the board under the Act have already been hypothecated or charged. Plans and estimates must accompany

¹ Secs. 99-112.

the application. If the applicant is an owner, the security offered for a loan shall be a mortgage on immovable property; and, with the amount for which the property is already hypothecated, it must be less than three-fourths of the latest valuation of the same. The security offered for a loan to an irrigation board shall be the rates leviable by the board under the Act, or such other security as may be approved by the Governor.

Secs. 102-104. Full proceedings are prescribed as to the formalities for obtaining such a loan, and the payment of the money to the applicant from time to time as the work proceeds.

Secs. 105-107. An irrigation loan advanced on the security of property shall be a charge upon that property, with preference over every other charge except a pre-existing mortgage in favor of a person who has not consented to the preference of the loan. A transfer of the hypothecated property must be made before the money is paid. An irrigation loan advanced to a board shall be a charge upon the rates of the board, with preference over all other charges.

Sec. 108. An irrigation loan shall be redeemed by the payment on the first day of January and the first day of July of one-half of the annual payment required to redeem such loan, in accordance with a general scale, the first payment not to be made later than two years from the date on which, in the opinion of the Minister, the works should be completed. Interest from the date of the loan shall accrue at the rate of $3\frac{1}{2}$ per cent per annum.

Secs. 109, 110. In case of a default by an irrigation board, the treasurer may levy and recover rates sufficient to pay all back indebtedness; or, in case of the default by a board or owner, the Minister shall cause such action to be taken at the expense of the board or owner as may be appropriate.

Sec. 111. The Minister may, by notification, fix special rates for the carriage on Government railways of such goods or materials as are to be used for the purposes of irrigation within the colony, as a subsidy or grant in aid of irrigation projects.

“Further, as a practical aid to irrigation, the Government has for some time past assisted farmers by leasing to them the services of Government drills, and by granting a subsidy

for work carried out on farms by private boring contractors for agricultural purposes.”²

Sec. 112. The Governor may proclaim regulations prescribing and defining the procedure for obtaining such loans, and for giving effect to the provisions of this part of the Act.

§ 142. **General provisions of the Irrigation Act, 1906.**—By the general provisions of the Irrigation Act, 1906,¹ the right of entry upon all lands is given the Minister or other officers; papers prescribed which are receivable in evidence; the enhancement of value of irrigated lands exempted from local rates, and the validity given to all regulations proclaimed by the Governor under the Act.

Sec. 117. The Governor, or a river or irrigation board, with the approval of the Governor, may prescribe a fine not exceeding £10 for the breach of any regulation or by-law.

Secs. 118-120. Offenses are prescribed against the Act, and jurisdiction given to try such cases to the resident magistrate, who may either try the case summarily, or hold a preparatory examination, as the case may require.

Any person summarily convicted of an offense under the Act shall be liable to a fine not exceeding £10, or to imprisonment not exceeding one month, or to both such fine and imprisonment; and, in the case of a second subsequent conviction to a fine not exceeding £25, or to imprisonment not exceeding two months, or to both such fine and imprisonment; and the magistrate may direct that the whole or any portion of the fine shall be paid by way of compensation to the person injured by the commission of the offense, if the person agrees to accept the payment in full satisfaction for the injury.

² From a letter to the author from Lewis Mansergh, Secretary of Public Works, Cape of Good Hope, South Africa, under date of June 3, 1908.

The conditions for the hire of Government drills are set forth in Notice No. 901 of 1905, and for the payment of subsidy in Notice No. 1084 of 1905.

Information upon various matters relating to water-boring operations

with Government drills, as well as by private contractors, will be found upon the following pages of the Annual Reports of the Public Works Department for the years 1903-1906, inclusive, viz: Report 1903, p. 100; 1904 (six months, Jan. to June), p. 64; 1904, p. 47; 1905, p. 53; 1906, p. 56.

¹ Secs. 113-121.

Sec. 121. The Governor may, for the purpose of carrying out the provisions of the Act, raise by way of loan, either temporarily or by means of colonial or consolidated stock to be issued by the colony or in England, under the provisions of "the Cape of Good Hope General Loans Act, 1881" as amended, a sum not exceeding £200,000.

§ 143. **Lessons to be learned from the colony of Cape of Good Hope.**—The lessons to be learned in matters of irrigation from the Cape of Good Hope Colony upon the practical side of the question are few. The country is still new in the practice of irrigation, and, therefore, as is the case in all new countries, the irrigation works are of the smaller order, and in some cases crude. In the matter of laws, we believe that the Colony made a mistake in recognizing the common law of riparian rights, and this will eventually lead to a clash of interests and much litigation, as is always the case where these rights and the right of appropriation are attempted to be maintained side by side. However, it is provided that the Water Courts may prescribe and limit these rights to a certain degree.¹ The creation of Water Courts is something of an innovation in the way of water-right litigation.² The giving these courts jurisdiction to adjudicate all water rights, and the somewhat summary method in which the proceedings are conducted will tend to shorten the time which these actions usually take.

The interest the Government takes in providing a loan fund, even to the extent of borrowing if need be, for the purpose of aiding in the construction of irrigation projects, is to be commended. Although this is being done by some of our Western States, the method of the making of these loans and their repayment is worthy of notice. South Africa has made a good start along the lines of irrigation, and her efforts are but to be commended.

¹ See, also, Sec. 139.

² See Sec. 139.

CHAPTER 8.

MODERN IRRIGATION IN ITALY.

- § 144. Peculiarities of the country.
- § 145. The statutes and laws governing waters and their use.
- § 146. Italy as a teacher of scientific irrigation.
- § 147. Lombardy—Naviglio Grande Canal.
- § 148. Lombardy—The Villoresi Canal.
- § 149. Lombardy—Management of Villoresi Canal.
- § 150. Lombardy—Vettabbia Canal—Use of sewage water.
- § 151. Irrigation in Piedmont.
- § 152. Piedmont—Cavour Canal—History.
- § 153. Piedmont—Cavour Canal—Particular features.
- § 154. Piedmont—Cavour Canal—Administration.
- § 155. Piedmont—Water rates from Government canals.
- § 156. Associations of water users.
- § 157. Associations of water users—General Association West of Sesia.
- § 158. General Association West of Sesia—Government.
- § 159. The lessons to be learned from Italy.

§ 144. **Peculiarities of the country.**—There is one other country whose system of irrigation we will detail at length. Irrigation in Italy, with its densely populated communities, means the prosperity of the Italian Kingdom. The great plains and valleys of the Po, Ticino, Dora Baltea, and Adige Rivers of that country are almost entirely subjected to systematic irrigation, which prodigiously increases their fertility. The extent of irrigated lands in the valley of the Po is estimated at over 5,000,000 acres. Piedmont, Lombardy, and Venetia are networks of irrigation canals, crossing over and under each other, threading their way in all directions, and bringing water to almost every field.¹

¹ For Ancient Irrigation by the Romans, see Sec. 75.

The country around Milan has been described by Hérissou as follows: "The system of irrigation has nowhere else been carried on to such an extent. As we pass through the Milanese lowlands we can perceive the power of this organization and its effects. Almost every hundred yards we come

upon either a canal or a drain. There is not a field but is bathed along at least two sides by clear and running water, brought sometimes from a distance of more than 100 miles. Fertilizing streams intermingle with blocks of cultivated land, which are always beautiful, and even in the dead of winter we may see mowers cutting down splendid crops of grass. This

Geologists inform us that the valley of the Po was originally occupied by an arm of the Adriatic Sea. It is 250 miles long and 30 to 100 miles wide, and is bounded and sheltered on three sides by great mountain ranges,—the Alps on the north and west and the Apennines on the south. Upon the east there is not a hill from Turin to the Adriatic Sea. There is slope enough to make it easy to spread water over the fields and to furnish drainage, except in the eastern part of the valley, especially near the borders of the Adriatic, where the country is so flat as to make the rivers almost seem to run up hill. The sediment washed down from the mountains has been deposited here by the Adige and Po Rivers until their channels have been built up above the surrounding lands. Here levees are necessary to keep the rivers within their bounds, and drains have been dug to carry the water off the adjacent fields. The works required to protect this part of the country from floods and to reclaim the flat lands along the sea coast rank in magnitude and cost with the irrigation canals on the upper portion of the river. More than half of the irrigated land of Italy is found in the provinces of Lombardy and Piedmont. These provinces are among the most densely populated in the world, reaching in some places 800 inhabitants to the square mile.

The main water supply of the valley is the Po. It rises on the north flank of the Mount Viso Mountains, a spur of the Alps, about 6,000 feet above the sea. For the first twenty miles it is a mountain torrent, but within fifty miles it changes into a broad stream, with a sandy channel, which looks somewhat like the Platte or Arkansas Rivers in the United States. Farther down toward the sea there is another change; the river has scarcely any fall and becomes a broad, sluggish stream, and an important highway of commerce. The rivers which rise in the Alps are largely fed from glaciers. They have their floods when the snows are melting

water which gives to the summer the freshness of the rainy season, can also give to winter the warmth of spring. The mind is overcome with wonder at what the intelligence and energy of the people have accomplished, especially when we consider that Lombardy has always been the battlefield

of all Europe and that it has been in the midst of incessant ravages of war and the continual changes of governments that these prodigious works have been constructed.”—*Rapport sur les Irrigations de la Vallée du Po*, Paris, 1881.

and during the autumn rains, April being the month when their supply for irrigation is most likely to be lacking. On several of these rivers floods are a constant menace to irrigation works. This is largely due to the destruction of the forests along their head waters.²

Other rivers rise or flow through lakes which serve as regulators, holding back the floods and warming the glacial waters, thus forming an added and valuable feature in the advantages this country presents for irrigated agriculture.

Northern Italy has the same latitude as the northern part of the United States. Milan, Turin, and Venice are farther north than St. Paul and Portland. Along the Adriatic there is little difference between the temperature of summer and winter, but in the western part of the irrigated district there are cold winters and long, hot summers.

The rainfall records have unusual interest because of the light they throw on the value of irrigation in humid regions. Northern Italy is not an arid country. The average rainfall of Milan, which city is in the center of the irrigated district, is greater than that of Cincinnati or Omaha, and it is three times that of Denver and about four times that of Salt Lake City. In other parts of the Po Valley the rainfall varies widely, being greater in some places and less in others. In some places the average annual rainfall reaches ninety inches. Close to the Alps the average is about fifty-five inches. In the middle of the valley the average ranges from thirty to forty inches. South of the Po it falls to twenty-five inches or less. It will be noticed from the above figures that in many parts of the United States crops are raised successfully without irrigation, and that, too, where there is less rainfall.³

² See The Relation of Forests to Stream Flow, Chap. 2, Secs. 40-62, and especially see Secs. 48-57, upon the influence of forests upon fallen precipitation.

Andamento Annuale e Diurno della Pioggia nel Clima di Milano, per E. Pini, 1891, Ulrico Hoepli, Milan.

³ For irrigation in Italy, see the following: Irrigation in Northern Italy, by Elwood Mead, Chief of Irrigation

Investigations, Bulletin No. 144 for Part I, 1904, and Bulletin No. 190 for Part II, 1907, Office of Experiment Stations, U. S. Dept. of Agriculture; Irrigation and Drainage Laws of Italy, translated by R. P. Teele, Expert Irrigation Institutions, 1907, Bulletin No. 192, same as above; Irrigation and Reclamation of Land for Agricultural Purposes in India, Egypt, Italy, etc., by Prof. George Davidson,

§ 145. **The statutes and laws governing waters and their use.**—The laws of Italy governing waters and their use are many and varied. There are general laws which apply to the entire kingdom, general laws which apply to any particular province in the kingdom, special laws which apply to any particular system of works, and rules and regulations of corporations and associations, which have also the effect of laws, under their charter.

By the general law of the kingdom of August 10, 1884, concerning the diversion of public waters,¹ the diversion of the public waters of the country, without first acquiring legal title thereto, is prohibited, in the following language: "Art. I. No one shall divert public waters, or establish any mill or other factory thereon, who has not a legal title or has not obtained a concession from the Government, which is subject to the payment of an annual rental and the conditions established by this law." Concessions for the use of water are made by royal decree, proposed by the Minister of Finance, upon the advice of the provincial council interested. And all concessions granted must be upon application to the proper officials, stating the quan-

1875, Executive Document No. 94, U. S. Senate, 44th Congress; Irrigation in Southern Europe, by Lieut. Scott Moncrieff, 1868, E. and F. N. Spon, London and New York; Italian Irrigation, by Capt. R. Baird Smith, 1855, Wm. Blackwood & Sons, London; Irrigazione del Piemonte, Canali demaniali d'irrigazione nelle Provincie di Torino, Novara, Pavia ed Alessandria, Seconda Edizione, Roma, 1902, Ministero di Agricoltura, Industria e Commercio, Direzione Generale dell' Agricoltura, Carta Idrografica D'Italia; Irrigazione nella Provincia di Novara, Roma, 1893, *ibid.*; Irrigazione in Provincia di Mantova, alla sinistra del Mincio e del Po, Roma, 1897, *ibid.*; Cenni sulle Bonificazioni nelle Provincie Venete ed in quella di Mantova, con le carte annesse, Roma, 1892, *ibid.*

See, also, the annual official bulletins issued by the Minister of Agri-

culture, Industries and Commerce, especially Vol. III, Rome, 1905; Manuale dell' utente delle acque d'irrigazione, ossia formole pratiche maggiormente in uso per calcolare la portata delle bocche di derivazione piu comuni e relative tavole, per Giovanni Pastore, 1894—Mortara: Botto; Trattato di Idraulica Pratica, per I. Nazzani, 1886—Milan: Ulrico Hoepli; Manuale dell' Ingegnere Civile e Industriale, per G. Colombo, 1902—Milan: Ulrico Hoepli.

¹ For the translation of this Act, see Irrigation and Drainage Laws of Italy, translated by R. P. Teele, Expert in Irrigation Institutions, 1907, Bulletin No. 192, Office of Experiment Stations, U. S. Dept. of Agriculture, pp. 9-13.

See, also, the laws and authorities cited in the following sections of this chapter.

tity of water, manner and condition of diversion, and other particulars relative to its use; and, where the diversion is for power, full particulars must also be stated relative to such use.² There are also general laws for the organization of associations for irrigation, which apply to all portions of the kingdom.³ The irrigation district laws and the regulations for the organization of Water Users' Associations under the National Reclamation Act, in the United States, are modeled somewhat upon these Italian laws and regulations.⁴

There are also in Italy laws, general in their application, for the reclamation of swamp and wet lands, and for the drainage of irrigated lands.⁵

Besides the general laws, which are applicable to the entire kingdom, there are many laws which are only applicable to particular provinces, particular corporations, or associations.⁶

§ 146. Italy as a teacher of scientific irrigation.—Italy has some of the greatest students of scientific irrigation in the world; and the practice of irrigation in that country has become more in

² For the regulations for the execution of the law of August 10, 1884, *supra*, see same bulletin cited, pp. 13-34.

³ Leggi Decreti e Regolamento sull' Ordinamento die Consorzi d' Irrigazione, 28 Febbraio 1886.

For a translation of the above and the regulations relative to the same, see bulletin cited above, pp. 35-44.

⁴ For the irrigation district laws, see Chap. 70.

For the National Reclamation Act, see Chap. 65.

For Water Users' Associations, see Chap. 65.

⁵ See Ministero dei Lavori Pubblici. Testo Unico della legge sulle bonificazione delle paludi e dei terreni paludosi, approvato con R. D. 22 Marzo 1900, Num. 195; *Id.* Regolamento per la esecuzione del testo unico della legge sulle bonificazioni delle paludi e dei terreni paludosi, 22 Marzo 1900,

Num. 195, approvato con R. D. 21 Ottobre 1900, Num. 409. For the translation of the above laws and regulations, by Mr. Teele, see the bulletin above referred to, pp. 45-100.

See, also, Leggi sulle di bonificazione di laghi, stagni, paludi e terreni paludosi, 25 Giugno 1882 e 4 Luglio 1886, Num. 869 e 3962, Serie 3; Decreto e regolamento per l'esecuzione delle leggi 25 Giugno 1882 e 4 Luglio 1886 sulla bonificazione delle paludi e dei terreni paludosi, 7 Settembre 1887, Num. 4963; Decreto e regolamento per le bonificazione delle paludi e dei terreni paludosi, 21 Ottobre 1900, Num. 409; Legge che porta modificazione ed aggiunte alle vigenti leggi vigenti leggi sulle bonificazione delle paludi e dei terreni paludosi, 18 Giugno 1889, Num. 236.

⁶ For Associations of Water Users, see Secs. 156-158.

the nature of an exact science than in any other country. On account of this, during the past fifty years, Italy has become a sort of school of irrigation for the rest of the world. The United States,¹ France, and the British Governments of Egypt, India, and Australia, as well as a number of other countries, have sent their ablest engineers and economists to study the Italian system, which for many years has made Northern Italy one of the greatest agricultural countries of Europe.²

The Cipolletti weir was invented by Cesare Cipolletti, who was for a time the chief engineer of the Villoresi Canal of Lombardy, Italy. This weir is today one in the most common use for the accurate measurement of flowing water, in the arid portions of the United States.³

Not only is Italy foremost upon the practical side of the question of irrigation, but it also leads in its laws and regulations governing, and the administration of, these works. And, in this respect, Italy is more like the United States; or rather, the United States is more like Italy, than are the countries controlled by the English, discussed in the previous chapters, where all of the water is claimed by the Government and is leased out to the consumers by the year, or for a term of years.⁴ There are laws regulating the diversion and use of the water by individuals and by corporations similar to those in this country,⁵ and by associations of consumers, similar in many respects to our irrigation districts.⁶ There are also laws regulating the works constructed

¹ See *Irrigation in Northern Italy*, Parts I and II, by Elwood Mead, Chief of Irrigation Investigations, U. S. Dept. of Agriculture, Bulletins No. 144 and No. 190, Office of Experiment Stations.

Irrigation and Reclamation of Land for Agricultural Purposes in India, Egypt, Italy, etc., by Prof. George Davidson, 1875, Executive Document No. 94, U. S. Senate, 44th Congress.

² See *Italian Irrigation*, by Capt R. Baird Smith, 1855; also *Irrigation in Madras, India*, 1856, by the same author, Wm. Blackwood & Sons, London; *Irrigation in Southern Europe*, by Lieut. Scott Moncrieff, 1868, E.

15—Vol. I—Kin. on Irr.

and F. N. Spon, London and New York.

For further works upon the subject of modern irrigation in Italy, see Secs. 144, 145.

See, also, the authorities cited in the subsequent sections of this chapter.

³ For the Measurement of Water, see Secs. 888-898.

⁴ For Modern Irrigation in Egypt, India, Australia, and South Africa, see Chaps. 4-7.

⁵ For Corporations, see Chaps. 72 *et seq.*

⁶ For Irrigation District Laws, see Chap. 70.

See, also, Part 14, the sections re-

entirely at Government expense, similar in many respects to those constructed under our National Reclamation Act;⁷ and also laws and regulations governing the use of the consumers under these works so constructed by the Government.

In the following sections we will discuss some of these systems, and the laws which govern them.

§ 147. **Lombardy—Naviglio Grande Canal.**—In the province of Lombardy, there are three distinct types of irrigation, with respect to their ownership and operation and the laws and regulations governing the same. As, for example, the Naviglio Grande is a canal owned by the Government, and used for irrigation, navigation, and power; the Villoresi Canal is owned by a corporation, similar to the modern irrigation corporations of the United States, and furnishes water for irrigation and power at annual rentals,¹ while the Vettabbia Canal is owned and operated by an association of farmers, similar to the mutual associations, which own and operate so many irrigation works throughout the western portion of the United States.² A description here of the peculiarities of these canals and their management and control will be sufficient as far as Lombardy is concerned. According to the official bulletin issued by the Minister of Agriculture, Industries, and Commerce, for the year 1905, there was then under irrigation in the province of Lombardy 680,000 ettari of land.

The Naviglio Grande is the largest and oldest of the three Government canals entering the city of Milan; it is the waterway to the west and unites the city with the Ticino River and the quarries, factories, and vineyards around Lake Maggiore. It was begun in 1177, and for more than seven hundred years it has been used both for navigation and irrigation. It is supposed to have been begun by the monks, because only the nobles and religious orders had at that time the means required for carrying out such enterprises. The most important structures connected with the canal are the dam and retaining walls at the head. This dam is 918.5 feet in length, and from 31 to 58 feet in breadth, and ex-

lating to this subject under the respective States.

⁷ For the National Reclamation Act, see Chap. 65.

¹ For the Villoresi Canal, see Secs. 148, 149.

² For the Vettabbia Canal, see Sec. 150.

tends diagonally up the stream, but does not reach entirely across. about 215 feet of the channel of the river on the opposite side from the canal being left open. The discharge of the Ticino varies widely in different years, having reached as high as 176,000 cubic feet per second. The stability of this dam is shown by the fact that it has stood for two hundred years, in spite of the fact that at times there have been tremendous floods. The canal has no headgates, on account of its use for navigation, and this has made the regulation of the supply during floods a serious problem to those who operate the canal. To accomplish this a large number of waste ways, having in all 185 openings, have been constructed within the first five miles of the canal. The first five miles of the canal have been reconstructed to utilize the heavy fall in this distance for power purposes. By the construction of the new canal for this distance the gain in the grade gives a drop of twenty-seven feet, which will furnish 6,000 effective horse-power. These improvements were made by a company to which the Government granted a franchise, for this purpose only, to run for sixty years at a yearly rental of \$3,600. The cost of the work was \$720,000. Navigation on the canal is free to the public.

There are over 100 ancient rights to the use of the water in the canal, which entitle the owners to the free delivery of the water covered by such rights, the Government getting nothing for the water or for the expenses in the maintenance of the works, or for the expenses in distributing the water.³ All of the ancient vested rights are protected by the Government to the same extent that vested rights are protected in this country, by the law and the courts. There are also some of the older water rights, for which a charge is made for annual maintenance and delivery of the water. But this charge is much lower than that which is made under recent agreements. No perpetual rights are now being sold by the Government, the usual limit for concessions being thirty years. What water the Government is able to dispose of without restrictions is delivered to the farmers for \$180 per cubic foot per second for the entire year, or for \$140 for the same volume for the summer irrigation.⁴

³ See, also, for ancient rights, Secs. 150-155.

⁴ See Irrigation in Northern Italy, by Elwood Mead, Chief of Irrigation

There are few places in the world, perhaps, where the growing influence of water for industrial uses is more apparent than in the valley of the Ticino, and that, too, in one of the oldest countries in the world. This is true especially along the upper half of the Naviglio Grande, and certain it is, that there are few places in the world where the industrial changes which are increasing the struggle for extended and intensive use of the water are more evident.

+

§ 148. **Lombardy—The Villoresi Canal.**—The Villoresi Canal is of special interest to American irrigators, because it belongs to the same type of canals as the largest irrigation works of the United States, with the exception of those that have been constructed by the Government under the National Irrigation Act. Its operation strongly resembles that of such canals as the Amity, High Line, and Del Norte, in the State of Colorado, the Wyoming Development Canal Company in Wyoming, the Bear River Canal in Utah, the Sunnyside Canal in Washington, and the Imperial Canal in California. This canal and those named in the United States are all owned and operated by private corporations. The arrangements for delivering the water have been worked out with more system than is shown in many similar enterprises in the United States. The idea of a high line canal was started in the fourteenth century, and after many attempts and failures, in 1850 an engineer by the name of Villoresi evolved plans for the canal, but owing to a conflict of water rights and the failure to secure sufficient subscriptions to the capital stock to enable Villoresi to begin the construction, he died in 1880 without seeing the work begun. Following Villoresi's death the city of Milan offered to undertake the work as a municipal enterprise if the farmers would agree to purchase 353 cubic feet of water per second. This they would not do, and the city abandoned the enterprise. The reasons for this failure were that the farmers were required to sign in advance perpetual contracts to take

Investigations, 1904, Bulletin No. 144, Office of Experiment Stations, U. S. Dept. of Agriculture, pp. 25-32.

See, also, Bollettino Ufficiale del Ministero d'Agricoltura, Industria e Commercio, p. 137; Carta Idrografica

d'Italia, Relazioni, Lombardia—Roma: G. Bertero, 1896; Relazione Settima, Fiumi, Canali e Laghi Navigabili di Lombardia, Ministero dei Lavori Pubblici, 1903, Roma.

water, which would have been equivalent to placing perpetual mortgages upon their farms. In the United States the same proposition has been met with in many enterprises. Farmers feel that there is hazard enough in signing such contracts after the canals are built, much less in advance of their construction. And the second cause of the failure was, that the holders of the prior rights to the water in the Ticino River feared the new canal would lessen their supply, or subject them to anxiety and expense in preventing the same. The same objections are frequently made to proposed enterprises in the United States, and even have to be met with by the Government in the construction of works under the National Irrigation Act. Before the Government would issue a concession to the corporation to build the new canal, arrangements had to be made to relieve the fears of the owners of the prior rights. This was done by building head works in such a way that they would let flow down the stream the entire amount belonging to the holders of prior rights below before any water could be taken into the Villoresi Canal. They also undertook to see that this agreement was carried out. And after a third of a century of fruitless effort to build the canal a corporation known as the Italian Society for Aqueducts offered to build the canal without any advance contracts from the farmers, if the city of Milan would give a bonus of \$400,000, payable in ten annual installments. This the city did, and thus one of the monumental irrigation works of the world was begun. No irrigation works in America equal it in the strength and perfection of its engineering features. From the dam at the head to the smallest measuring box on the laterals the work has been planned and carried out with a perfection and careful consideration of the service it is to render. Without going into a detailed description of the engineering features of this enterprise, we will only say that the dam is 950 feet long, 78 feet wide, and 12 feet high, and is built of concrete faced with cut granite masonry, and is protected at the foot by a masonry platform, which extends downstream 50 feet. Both ends of the dam are protected by masonry wing-walls, which were necessary to protect it from the enormous floods. A navigation canal, with suitable locks was constructed; also, a weir had to be so constructed

that it would guarantee the automatic delivery of the water belonging to the holders of prior rights below.

§ 149. **Lombardy—Management of Villoresi Canal.**—The management of the Villoresi Canal is of more interest to the American irrigator than its construction. The territory served by the canal is divided into four main districts, each of which is supplied with one or more branches. The farmers who live under the branch canals are united into two classes of associations, one of which is a subdivision of the other. The larger society is called the “comprendorio,” and embraces the whole of a secondary canal, or all of one of its more important branches. The smaller society is called a “comizio,” and is composed of those farmers that take directly from field laterals, each lateral having its separate society. These laterals, together, have representatives in the larger society. The Italian Society for Aqueducts, the owner of the canal, does not, as a rule, retail water to the individual farmer. It sells it at wholesale to the comprendori, and these societies retail it to the comizi, and the members of each comizio arrange for the division of the quantity of water that they so purchase among themselves. The power given by the Government to the owning corporation makes these contracts between it and the various associations of comprendori practically the law upon the subject. The contracts are for a term of six years. These long-term contracts are one of the interesting features of water-right agreements in Italy.¹ These associations of comprendori are very similar to the Water Users’ Associations under the operations of the National Reclamation Act of the United States.²

¹ For a more complete description of the Villoresi Canal, see *Irrigation in Northern Italy, Part I*, by Elwood Mead, 1904, Bulletin No. 144, Office Experiment Stations, U.S. Dept. of Agriculture, pp. 32-58; *Società Italiana per Condotte d’Acqua—Brevi Cenni sul Canale Villoresi*—Roma: Ereda Botta, 1885, p. 18; *Canale Villoresi, e Fiume Ticino—Tabella delle Portate del*—Milan: Capriolo e Massimino, 1902; *Comprendorio di Corbetta*—Testo unico del regolamento del,

del 1900, Corbetta: L. Radaelli, 1900; *Id. Memoria pella liquidazione dell’acquisto di servitu di passaggio d’acqua in base ai patti ed alle condizioni del regolamento del comprendorio*; *Id. Convenzione fra il, e la Società Italiana per condotte d’acqua relativa ai cavi emuntori e fuggatore*; *Id. Convenzione per affitto d’acqua del Canale Villoresi pel sei enno 1898-1903.*

² For Water Users’ Associations, see Chap. 65.

In selling water to these associations the canal company does not always charge the same price. Like a railway company, it

The important features of this contract with the Corbetta comprensorio, translated, is as follows:

(3) After stating where the water acquired by the users will be measured, the section proceeds: The water will be measured and delivered according to the quantities and schedules communicated by the officers of the association to the Italian Society (the owner). The distribution of water at the measuring boxes of the districts along the Corbetta Canal shall be made by the association at its own expense, as well as the distribution in the canals in the association below the modules. The Italian Society will, however, clean, maintain, and repair the secondary canal and all the modules for measuring water to the same secondary canal and to the districts.

(4) The above mentioned water will be distributed to the districts of the association of Corbetta by the officers of the association and will be distributed if possible in rotation running through seven days and in a quantity of 200 to 320 water liters (7 to 11 cubic feet per second), according to the judgment of the supervising committee of the association, taking into consideration the kind of land to be watered, the distance from the measuring box, and the kind of distributing ditches and laterals. Each subscriber will have the right to use a stream for fourteen minutes for every perdica of meadow and four minutes for every perdica of other crops.

(5) The water for the lands not members of the association will be at the disposal of the Italian Society, or its representatives, and will have the following water hour for each period: To each of the districts 1, 2, 3, and

4, five hours; to each of the districts 5, 6, 7, 8, and 9, seven hours, and for each of the districts 10, 11, 12, 13, 15, and 21, nine hours. The society has the right to change a part of the water from one district to another, but not in such manner as to give more than twelve hours to non-members in any district. That part of the period of rotation which has not been assigned to those who are not members of the association will be for the free disposal of the association. The parochial prebenda and the ecclesiastical beneficiaries that have made special arrangements with the Italian Society in order to have the same rights as members (of the association) are considered in this case as being members. If any parties who are not yet in the list of members desire to enter that list before the month of June, 1903, with the purpose of receiving the water under the conditions of this agreement, the officers of the association shall have the right to give them water so long as this agreement continues. The money paid by these parties for water will be divided equally between the society and the subscribers to this agreement. In this case the society renounces a part of the hours it has the right to have under Article 3 in the districts belonging to the parties that have become parties to this agreement.

(6) During the six years (as provided for in Sec. 1) the undersigned consumers must use the water purchased only on the lands belonging to themselves, as located on the maps of the association, or for lands represented by the undersigned consumers in this agreement, and located on the maps of the association. (An official

charges for the distance the water is carried. The expense for delivering water at the lower end of the canal is greater than

map is made of the irrigated territory included in each association and the districts in this territory numbered. The numbers above given in paragraph 5 refer to the districts as numbered on this official map. The land of non-members is interspersed with that of members and is watered from the same laterals, but under separate agreements.) *In case of violation of this rule the society has the right and the association has both the right and duty of cutting off the water of the consumers who violate the rules. For this stoppage of water the consumer has no right to ask for damage; on the contrary, the rights of the society are unimpaired and the consumer is obliged to pay the price fixed in paragraph 5.*

(7) For the water put at the disposal of the undersigned consumers these consumers obligate themselves to pay to the Italian Society in Milan, in two installments, one on the 15th of June and the other on the 15th of July of each year during the present agreement, 45,000 lire, divided among the subscribers according to the schedule in paragraph 14. In said sum of 45,000 lire, and in the sums to be paid by every subscriber, is included the annual rental for partnership water and the annual payments for the sinking fund to the Italian Society for Aqueducts. The receipts of the society (Villoresi Canal Company) to its customers shall show that they have paid the annual sinking fund. If a customer has not paid within fifteen days after the time fixed, the society has the right and the association has the right and duty of cutting off the use of water to that customer under the conditions stated in paragraph 5. In

any event, this customer has to pay the society interest at the rate of 5 per cent per annum for the amounts that he did not pay at the proper time, for the period from the date when due to the date of payment, deducting fifteen days' grace granted as above.

(8) It is agreed that each consumer shall obligate himself individually and his successors to the Italian Society for the amount that he is to pay, according to paragraph 15.

(9) All the subscribers to the present agreement obligate themselves to take water for all the land shown on the map of the association, both meadow and cultivated land. In the 14th, 15th, and 21st districts the lands which the members of the association will not water from the Villoresi Canal during the six years of this agreement shall not be considered if the supervising committee to the Corbetta Association will admit that they are provided with their own water supply. One or more members will be permitted to represent the water belonging to the members not signing the agreement, assuming all the rights and duties toward the Italian Society. Payments for water shall be based upon one perdecia of the land shown by the map of the association, and at uniform rates for the different kinds of land in the different zones of the association. For the list of the sums to be paid by each subscriber see Article 14. In these sums are to be included what is to be paid by the subscribers for partnership water. The payments to the sinking fund of 5 lire for one liter are to be added to the sum which each subscriber is to pay to the society. For no reason can a subscriber

at the upper end. There is greater loss from seepage and evaporation, hence the associations at the lower end are charged a higher price.

The cubic meter per second (35.31 cubic feet per second) is

pay less than the price of the water for which he originally subscribed. In case the amount raised by the above specified uniform rates and the sums for the sinking fund do not reach a total of 45,000 lire, the subscribers obligate themselves, if it is necessary in order to reach that sum, to increase the amount they have to pay 5 per cent, excluding their payments to the sinking fund.

(10) If any members, directly or through their tenants, have already assumed obligations for water from the association, or for the rental of water advantageous to the Italian Society, it is agreed that if said members, or their tenants, do not accept the present agreement, those who sign will consent that the association place at the disposal of the members not consenting, or their tenants, the water for which they have contracted, and the Italian Society for Aqueducts will include in the 45,000 lire agreed upon the payments to be made by these members, and will be responsible for their collection.

(11) If for any reason the water supply is partially or entirely deficient the Italian Society shall refund to the undersigned customers a part of the sums paid in, proportional to the deficiency and its duration; but no account shall be taken of a deficiency in the water supply during the spring time prior to April 15. Equal reimbursements shall be made to subscribers in districts in which irrigation is forbidden by order of the public authorities. No money shall be refunded by the said Italian Society under the

last named condition, provided the suspension or prohibition takes effect after August 15.

Reimbursements shall be made at the office of the Italian Society in Milan on the 30th of September of each year in which there is a deficiency in the water supply or in which irrigation is prohibited; but it is stipulated that such deficiency or prohibition shall not in any way remove the obligation of paying to the Italian Society the sums fixed and at the times specified, as provided in Article 6.

(12) If the association finds it necessary because of heavy rains or other reasons to reduce the amount of water supplied, the Italian Society for Aqueducts guarantees to arrange for the required reduction within a period of 48 hours.

(13) This agreement must be subscribed to on or before February 10, 1898. If at that date the amount subscribed has not reached the sum of 45,000 lire, including the assessment of 5 per cent provided for in Article 9 (last clauses), this agreement shall be void and without effect.

(14) Provides for the reduction of 9,089.50 lire for partnership water already purchased by the subscribers to the agreement, in accordance with previous agreements, leaving a balance on which the tax is to be levied annually for six years of the sum of 35,910.00 lire, or a total for the six years of 215,463 lire (\$43,092.60).

(15) Contains a long list of the subscribers to the agreement and the amount for which each is responsible.

the unit of volume usually employed in the wholesale transactions to the comprensori; in retail transactions the liter per second (0.035 cubic foot per second) is the unit employed. Among the members of the comizio no attempt is made to measure the water. They make their division on a time basis, each one taking the full amount purchased for the number of hours per week, which represents his part of the payment. Thus, if a certain amount of water per second is delivered at the head of a lateral, the farmer who pays for one-fourteenth of it would be allowed the whole amount for twelve hours each week. The canal company does not allow farmers to sell water to one another. The right of use can not be shifted from the land described in the contracts without the consent of the canal company. A farmer is not allowed to irrigate one of his fields with water he has purchased for the irrigation for another.

Irrigators under the Villoresi Canal can obtain water in one of three ways:

(1) Water is furnished at 30 lire per liter per second (\$166 per cubic foot per second) as an annual rental, with 5 lire (\$1) additional annual payment on the purchase price of a perpetual water right in the canal. These annual payments of 5 lire are to continue for forty years, making the cost of a perpetual right to one liter per second \$40.

(2) Water is furnished at 30 to 40 lire for one hour's run each week of 200 liters per second (\$5.80 to \$7.75 for one hour each week of seven cubic feet per second).

(3) The canal company sells to farmers' associations at wholesale under special agreements, a copy of one of which agreements is set forth in the foot note.

The canal company each year publishes large posters, giving the terms under which it will furnish water to individuals or associations who may desire the water for one season only. The contract price upon a six years' contract usually varies in accordance with the amount furnished, being less for the larger amount.

§ 150. Lombardy—Vettabbia Canal—Use of sewage water.—There is another canal in Lombardy, which, on account of the various propositions it involves, is worthy of the closest study

by the American irrigator. This is called the Vettabbia Canal, and is owned and operated by an association of farmers, composed of fifty voting members; some of them represent smaller associations formed by irrigators along laterals, this being the prevailing practice under Italian irrigation works. The members of the main society pay each year a certain amount for expenses, and each member of the association is entitled to a certain definite amount of water. Whatever amount can be saved above this is sold to other irrigators.

If history and tradition are to be believed, the Vettabbia Canal is the oldest irrigation work in Lombardy, and it irrigates fields where *marcite*—the most profitable crop in Italy—was first grown.¹ This canal was originally a natural stream formed by the confluence of three small creeks, which come together in what is now the city of Milan. Later on, when Milan grew into a fortified town, surrounded by a wall and a moat, these creeks emptied into the moat, for which the Vettabbia River served as a waste way and drain. A few miles below the city the Cistercian monks had founded the monastery of Chiarvalle and brought under cultivation a large tract of land. The creek which flowed past it served as a sewer for the city and the water had an additional value as a fertilizer, and small ditches were built about seven hundred and fifty years ago to bring the water upon the lands of the monastery. As time went on other religious communities scattered along the Vettabbia had become aware of the value of its water for irrigation, and in the years 1236-1311 received grants to the rights to its use. In 1267 the health of the city was impaired because the crooked, shallow channel of the Vettabbia furnished an imperfect drain for its sewers, and agree-

1 *Marcite*, a mixture of clover and Italian rye grass. The method of irrigation is to have the water flow almost continuously in winter and either continuously or at short intervals in summer. The grass is cut when about 18 inches high, and on some farms 10 to 12 cuttings are made each year, of from 10 to 15 tons per acre. It sells at about \$2.00 per ton.

For a more complete description of the Vettabbia Canal, see *Irrigation in Northern Italy*, Part I, by Elwood Mead, 1904, Bulletin No. 144, Office of Experiment Stations, U. S. Dept. of Agriculture, pp. 58-67.

See, also, the authorities cited upon irrigation in Lombardy, in the last two sections, Nos. 148, 149; *La Vettabbia*; a history of the Vettabbia Canal.

ments were made with the various monasteries to give them the right to the sewage water if the monasteries would improve the channel so as to carry it away from the city. This was accomplished, and the sewage mixed with the water of the various streams has been put to use for irrigation, this being the earliest example known of the purification of sewage water by using it for irrigation.² By subsequent changes, the water rights in this canal passed out of the hands of the church authorities and into the possession of the association of land owners above described.

² See Sewage Water for Irrigation, Sec. 1131.

The sewage of a part of Milan has been discharged into the Vettabbia and used on the lands under that canal for centuries. At the present time the sewage from part of the city having 150,000 inhabitants is at present used upon an area of 6788 acres, more than 5000 acres of which are marcite meadows. These meadows, unlike the sewage farms of other European cities, are not cultivated, and it was thought by many that their use as a means of sewage purification was detrimental to the health of the region and might prove injurious to agriculture. In 1900 the city of Milan appointed a commission to inquire into the whole matter of sewage disposal. A sub-commission was charged with the investigation of the hygienic and agricultural effect of the use of sewage in the irrigation of marcite. The work of this commission included analyses of the water before it was applied to the land, and as it flowed from the meadows; analyses of the water from springs and wells; analyses of the soil on which the water had been used; and inquiries into the records of disease and mortality, and of crop returns.

The soil on which the sewage is used is disintegrated rock resting on a bed of sand and gravel, and is

therefore favorable to filtration of water. Marcite meadows have the advantage of using water throughout the year, but the disadvantage of not being plowed so as to bring the sewage water in contact with fresh soil. It was found that a part of the filtration took place in the soil and a part through the grass. In marcite irrigation the water is used upon several squares in succession, that draining from the first square being collected in drains and applied to the second square, and again collected and applied to the other lands. It was found that muddy water applied to the first square came off nearly clear, and after flowing over two or three squares was perfectly clear, free from odor, and without any of the impurities contained in the sewage water. From the standpoint of the purification of the water its use in marcite irrigation is entirely successful.

It was found that there were bare spots in the meadows on which a coating of algae had formed, preventing the growth of the grass, and that paper and other refuse collected in places sufficiently to cause some inconvenience, but the commission was of the opinion that both of these could be prevented by care in cleaning the canals and in the use of water. Analyses showed that in places where the soil contained no lime there was a

Under the new drainage system which was planned for the city in 1889, the Vettabbia Association enlarged the canals to carry away the increased drainage of the city, and receives in consideration for these expenditures, which amounted to about \$400,000, a right to the municipal sewage and drainage water from 5,187 acres of land. The municipality pays all the expenses within the city limits, and the canal association all the expenses outside. This seems to be a satisfactory arrangement all around—the city of Milan feels that it is satisfactory to get rid of the sewage without expense, and the canal company is making fortunes in using it in connection with the other water it owns for irrigation.

The disposition of sewage from our large cities so as not to be a constant menace to health, has always been one of the great questions that have confronted the American people. The question of how to dispose of it, and at the same time to utilize it at a profit, has barely been touched upon. This old Italian city, located as it is in the midst of what we would call an overpopulated country, seems to have solved both of these questions to the satisfaction of the population at large and to science.

§ 151. Irrigation in Piedmont.—In Piedmont there are two classes of streams: Those which rise in the foothills and are fed

tendency for organic matter to accumulate to a harmful degree. This condition can be corrected by the application of lime, and the commission recommends that course.

Analyses of water from wells and springs showed that there was no contamination from sewage water, and careful inquiry and examination of records showed that the sanitary conditions under the Vettabbia were not different from those in other sections.

The general conclusions of the commission were that the water is thoroughly purified; that there is no danger to health; that from an agricultural standpoint there was some trouble, but it was of little importance and can be overcome with proper care.

It is recommended that in order to maintain these conditions that there should be one acre of land to every 36 inhabitants, and in no case less than one acre to 60 inhabitants, and that provision should be made for diluting the sewage water to such an extent that the nitrate contents shall not exceed 120 milligrams per gallon. If these conditions are observed there will be no danger in the use of sewage water. Irrigation in Northern Italy, by Elwood Mead, 1904, Part I, p. 66, U. S. Dept. of Agriculture, Experiment Stations, Bulletin No. 144.

See, also, *La depurazione Agricola delle Acque di Fognatura di Milano*, per A. Celli e A. Menozzi, 1902, Modena Societa Tipografica.

by the rains and snows, and those which extend back into the high mountains and are fed largely by glaciers. The waters of the first class are warm, and, as a rule, carry considerable fertilizing material. On the other hand, the streams fed by the glaciers are too cold to be used in the spring. Cakes of ice sometimes travel the entire length of the canals diverting the Dora Baltea. As formerly used, neither class of these rivers exactly met the requirements of the irrigators depending upon them. Farmers along the glacial rivers were often short of water in the spring, or were compelled to irrigate when the water was so cold that the growth of the crops was checked. The farmers along the foothill streams, on the other hand, had more warm water in the spring than they could make use of and suffered from droughts in midsummer. It was realized that if the water of the foothill and glacial streams could be mixed so that the irrigators could be served by the foothill streams in winter and spring, and by the glacial rivers in summer, it would add immensely to the profits of agriculture. It was found that this could be done by building a regulating canal along the foothills, intercepting the different rivers flowing down from the mountains into it in such a way as to use them for feeders for the canal, or to turn the water into them, as conditions might require. The project of building such a regulating canal was first publicly advocated in 1633. The canal that was finally built follows the surveys of the distinguished Italian engineer, Carlo Noe, and the credit for carrying out the project is largely due to the enterprise and persistence of Count Cavour, for whom the canal was named.¹

¹ For irrigation in Piedmont, see *Irrigation in Northern Italy*, Part I, by Elwood Mead, 1904, Bulletin No. 144, Office Experiment Stations, U. S. Dept. of Agriculture, pp. 68-100; *Bollettino Ufficiale del Ministro d'Agricoltura*, Industria e Commercio, Roma, 1905, p. 136; *Id. Carta Idrografica d'Italia*, Relazione, Piemonte, Roma, 1895, G. Bertero; *Id. Carta Idrografica, d'Italia*, Irrigazione del Piemonte, Canali demaniali d'Irrigazione nelle Province di Torino, Novara,

Pavia ed Alessandria, 2d Ed., 1902; *Id. Carta Idrografica d'Italia*, Irrigazione nella Provincia di Novara, Roma, 1893; *Leggi e Decreti sul Riscatto dei Canali Cavour*, 16 Giugno 6, 9, e 11 Luglio, 1874, Nri. 2002, 2004, 2018 e 2020, Serie 2, Turin: Gazzetta del Popolo, 1874; *Leggi complementari sul Canale Cavour sul Cavo Gazelli presso Chivasso sul Canale di Cigliano e sul Canale Quintino Sella*, 23 Luglio 1881, 7 Marzo 1886, 6 Febbraio 1887, 2 Giugno 1887 e Agosto 1893,

According to the official bulletin of the Minister of Agriculture, Industry, and Commerce, there were under irrigation in Piedmont in the year 1905, under all canals, 542,200 acres.² And the total length of the main canals owned by the Government was something over 1,000 miles.

§ 152. **Piedmont—Cavour Canal—History.**—The system of irrigation works of which the Cavour Canal is the basis, has its office in Turin, the capital of Piedmont. It will aid in understanding the system to give something of the history of its evolution; this will also serve as a practical illustration to the irrigators of America as to how enormous conflicting interests can be brought under one system of Government and control, which can only result in good to the country at large where that system is operated, as well as to the individuals directly interested.

Water rights and the ownership of canals in eastern Piedmont have always been closely interwoven with the political and financial fortunes of the country's rulers. As early as the twelfth century a number of the canals, which now form the system of the Cavour, were constructed by the various houses of the nobility, and religious orders. By inheritance, sale, gift, and war, these various canals were held in private ownership until the middle

Nri. 329, 3714, 4313, 4530, Serie 3 e 446; Turin: Gazzetta del Popolo, 1894; Decreto e Regolamento per l'amministrazione Economica del Canale Cavour e degli altri Canali che vi sono annessi, 27 Aprile 1890, Nri. 6861, Serie 3; Turin: Gazzetta del Popolo, 1890; Legge riguardante i Consorzi per l'Irrigazione in data 25 Maggio 1873, Nri. 1387, Serie 2; Turin: Gazzetta del Popolo, 1887; Leggi, Decreti e Regolamento sul l'Ordinamento dei Consorzi d'Irrigazione, 28 Febbraio 1886, Nri. 3731, 3732 e 3733, Serie 3, Turin: Gazzetta del Popolo, 1887; Regio Decreto che modifica l'articolo 18 del regolamento 28 Febbraio 1886, Nri. 3733 serie 3a, per l'esecuzione delle leggi sui d'Irrigazione, 30 Gennaio 1890; Legge

portante disposizione complementari alla legge 28 Febbraio 1886, Nri. 3732 serie 3a, sui consorzi di irrigazione e di derivazione di acque per uso industriale, 11 Maggio 1890; Legge che fissa le norme e le disposizioni secondo le quali debbono essere ordinati i consorzi di derivazione e di uso delle a scopo industriale sia volontari che obbligatori, 2 Febbraio 1888, Nri. 5192, Serie 3a, Turin: Gazzetta del Popolo, 1888; Decreto e regolamento per l'esecuzione della legge 2 Febbraio 1886, Nri. 5192, concernente i consorzi di derivazione e di uso delle acque a scopo industriale, 24 Giugno 1888, Nri. 5497, Serie 3a, Turin: Gazzetta del Popolo, 1888.

² Official Bulletin, 1905, p. 136.

of the nineteenth century, when, in one way or another, they were absorbed by the Government, which had to assume the obligation of supplying free of all charges certain ancient and perpetual rights. The advantages of uniting the different water supplies and operating a large number of canals under one system had long been manifest. The creation of one comprehensive system, however, made little substantial progress until 1840. At this time the needs of irrigation had become so great that the farmers were insistent in their demand for more water and additional canals. Previous to 1853 the farmers had little benefit from Government ownership of canals. The properties belonging to the State were farmed out to speculators, who were given free hand to make whatever terms they could with the irrigators, and often oppressive rates were charged, which the farmers had to pay. In 1853, however, the Government put an end to this practice. A co-operative society of farmers was organized, which included all the users of water from the State canals, and this society did away with the speculative middlemen.

Owing to the war with Austria, the Government did not have the money to build the Cavour Canal, and finally made a contract with a syndicate of English and French capitalists, by which it sold to the syndicate all of the canals taking water from the Dora Baltea, Elvo, Servo, and Sesia Rivers, then owned by the State, for \$4,060,000; the company, however, being obliged to respect all of the ancient vested rights in these canals and to carry out a contract of the Government made with the farmers. The company constructed the main canal, but got into financial difficulties owing to the failure to sell its bonds, and to increased expenses, and was therefore unable to carry out its agreement with the farmers' association, and therefore the farmers terminated the contract. In 1867 the company was declared bankrupt, and for three years the whole project was tied up in litigation and other complications. More than \$10,000,000 had been spent, in addition to the first cost, and when the main canal had been completed, only about one-tenth of the water could be disposed of, and the small revenue from this would not pay the interest guaranteed by the State; and, as the canal had not been built, as it was claimed by the Government, according to the specifications, the Government refused to pay this. In the suit which

followed, the Government was defeated, but in the meantime the company had gone into bankruptcy, and the complications and controversies which beset it led to the creation of a commission in 1870 to determine what the Government should do. The Government purchased the property under the law passed in June, 1874, together with the other canals which it had originally owned, and those which had been built or purchased as a part of the system. Since that time the canal has been owned by the Government and operated as a State work.

This canal, irrigating as it does about 200,000 acres of land, and managed entirely by the Government, is one of the best examples of governmental control of such works. It also shows the many benefits to be derived by uniting under a single ownership and control all interests within a single district.¹

§ 153. Piedmont—Cavour Canal—Particular features.—The Cavour Canal starts on the north bank of the Po, about fifteen miles below Turin, the capital of Piedmont. It crosses the Dora Baltea River on an arched masonry aqueduct, and goes under the Elvo and Sesia Rivers by means of inverted syphons, and, after crossing a large number of canals and smaller streams, finally ends on the west bank of the Ticino River. When it was built one great source of expense was arranging for these canal crossings. Some of the canals were connected with it from the outset and others have been brought into connection, so that now the prevailing plan is to let the canals which start from these rivers above empty into the Cavour and then fill them again at the points most desirable on the other side. This right was granted by the owners of the old canals also, for the reason that, by having all the higher canals empty into the Cavour the water from the cold and warm streams, and from the streams carrying silt, and those clear, becomes thoroughly mixed, and irrigators below have the advantage of water adapted to irrigation throughout the year. The Cavour, therefore, has connected with it an immense system of subsidiary canals feeding it and drawing water from it. The water it takes directly from the rivers is consequently only a fraction of what it receives and discharges. To

¹ For the laws governing the Cavour Canal and the province of Piedmont, see Secs. 154-158.

16—Vol. I—Kin. on Irr.

keep an accurate record of the water received from the streams and canals and that turned out into other streams and canals, is an undertaking in water measurement more complicated and important than any yet required on any irrigation system in the United States, and illustrates the fact that the measurement and the control of water rights as between conflicting interests has become an exact science. The combined capacity of the Cavour Canal and its connections is 10,240 cubic feet per second, and it is the most costly Government canal in Europe.¹

All the works are constructed in the most substantial manner known to science, regardless of cost, and with a view only to permanency. And not only this, where opportunity offered, architectural beauty has been added appropriate to great public works. The headgate is of an imposing and monumental character, three stories in height, upon the top of which is a bridge for crossing and a gallery for the operation of the gates. Much of the canal work is of solid masonry. The total length of the main canal is 51.1 miles, and at the head it is 131 feet wide upon the bottom. The total cost of the properties transferred, with the improvements made on them since, represents an outlay by the Government of Italy of over \$20,000,000.

§ 154. Piedmont—Cavour Canal—Administration.—The Cavour Canal was sold to the Government in 1874, with all the connecting canals, their rights and privileges. The properties then had cost nearly \$20,000,000. They are administered by the treasury department of the Government, the head office being in Turin, with branch offices in other cities. The general manager, water masters, and ditch tenders are connected with the treasury department; the engineering force, with the department of public works. Two branches of the Italian Government have, therefore, intimate relations with the Government irrigation works.

The general manager superintends the making of contracts or concessions, fixes water rentals, and arranges for the delivery of water to consumers. He has charge of all surveys and plans for

¹ For a description of the Cavour Canal system, see *Irrigation in Northern Italy*, Part I, pp. 68-93, by Elwood Mead, Bulletin No. 144, Office of

Experiment Stations, U. S. Dept. of Agriculture.

See, also, the authorities cited in Sec. 151.

improvements and for the disposal of water for purposes other than irrigation. He represents the Government in all lawsuits and signs all contracts. The supervisors, ditch tenders, and tax collectors are subordinates of the general manager. Civil service regulations govern all employment under the treasury department. One-half the vacancies among the supervisors must be filled from the ranks of subordinates, and the other half taken from the minor officers in the army. All vacancies among ditch tenders except the lowest rank are filled by promotion. These regulations have given to the canals a body of highly trained and thoroughly competent men.

The chief engineer is connected with the department of public works, but is under the direction of the general manager. He makes plans for all improvements or repairs, prepares estimates of expenses for operation and maintenance, and is authorized to do emergency work without instructions from the general manager. He purchases all supplies, superintends the construction of any work undertaken, examines applications for water-right concessions, and is the expert engineering adviser of the general manager on all questions, whether administrative, legal, or technical.

Plans and estimates for any work to cost more than \$400 must be approved by the engineer. Contracts which involve an expenditure of more than \$8,000 must be let by public bid. Contracts which involve more than \$1,600 up to \$8,000, may be let privately, but must first be submitted to the Minister of the Treasury. In emergency cases the general manager can make contracts up to \$1,600 without this reference.

§ 155. Piedmont—Water rates from Government canals.—The sale of the water from the Government canals of Italy is of particular interest to the American irrigator and the capitalists interested in the subject. Like all governments which own and operate irrigation works in Europe, Italy seeks to operate her works at a profit. The price charged for water varies in different localities, depending upon the distance that the water has to be conveyed before it reaches the place of use, and the competition offered by private companies. The basis of measurement for such sales is usually the cubic foot per second of time, either for the

whole or a portion of the year. However, in some cases it is based upon acreage, depending upon the character of the crops irrigated. The average annual income of the Government canals in the Province of Piedmont is the sum of about \$600,000.¹ A considerable part of the water carried by the State canals belongs to the holders of ancient perpetual rights, which are not affected by tariffs or other regulations. This, of course, makes the expenses for operating correspondingly higher upon the Government or the association which has to deliver the water, and for which there is no recompense, except by assessing the individual users higher than they should be assessed for the amounts that they respectively use. In disposing of the water which has no incumbrance of ancient rights, payments depend upon the use made of the water, the different uses being classified as follows:

Summer irrigation, winter irrigation, power for operating farm machinery, power for industrial establishments, water for ice making.

There is a regular tariff for each of these uses except power for industrial establishments, where special agreements are made in each case. In none of the contracts of the Government is there any guaranty against damage because of shortage in the water supply in the streams or from accidents, but where the full amount is not furnished the amount paid is proportionately reduced. As far as possible contracts for power are made subordinate to contracts for irrigation.

Three methods for regulating charges are used in this system, which are as follows:

1. Charging according to the area irrigated.
2. Charging for the quantity flowing through a simple opening in the side of a canal.
3. Charging for the quantity delivered, measured by regulating either the pressure on an orifice or the depth flowing over a weir.

The present rate of tariffs is as follows:

1. The regular price for summer irrigation is \$125.75 per cubic foot per second.

¹ See Irrigation in Northern Italy, Part I, by Elwood Mead, 1904, Bulletin No. 144, Office Experiment Sta-

tions, U. S. Dept. of Agriculture, pp. 84-86.

2. The special price for summer irrigation is \$82 per cubic foot per second. (This is the price to associations that take very large quantities.)

3. A reduction of 20 per cent is made for three years when the land is irrigated for the first time.

4. The price for winter irrigation is \$9.84 per cubic foot per second.

5. The price for power purposes is \$1 per horse-power per month.

6. The price for water furnished by the day during the summer is \$2.18 per cubic foot per second.

Where payment for water is based on the area irrigated, the charges are as follows:

7. Water for rice fields, \$7.81 an acre.

8. Water for meadows, \$4.69 an acre.

9. Water for marcite, \$5.86 an acre.

The cost of water supplied to irrigators by private canals varies greatly, dependent upon the ownership of the canals, and competition between canals. The distance from the stream also affects the rates. There are also many seepage canals which gather up the waste water from the State canals and the water which percolates from the fields above. Rates under these canals are low because they cost little to build, are not subject to dangers from storms, and the water supply can not always be relied upon. In the irrigation of rice, rentals are frequently paid in a share of the crops. This plan has also been adopted in some portions of the United States, notably Louisiana and Texas. Where the water rental is so paid the share varies from one-fourth to one-seventh, according to the place and the amount of water required.

§ 156. Associations of water users.—The organizations or associations of water users under the Government canals in Italy have been largely copied in our "Water Users' Associations," under the Government projects constructed under the provisions of the National Reclamation Act of the United States.¹ By this means, the Governments in both cases deal with the associations instead of the individual, and thus leave to such associations the minute

¹ For the National Reclamation Act, see Chap. 65.

For Water Users' Associations, see Chap. 65.

and detailed supervision of the use of the water by each individual consumer to the association, which supervision would otherwise be required by the Government. In Italy, the greater portion of the water from the canals owned and operated by the Government is sold to these farmers' associations. The policy of the State is to discourage contracts with the individual irrigators. These associations are worthy of the closest study by the American irrigators, and serve to illustrate how the many, diverse, adverse, and oftentimes hostile interests can be brought together under one harmonious whole. These associations buy the water at wholesale rates, and then retail it to their members, who are the actual consumers. The loss to the Government on these rates is more than made up by the expenses which it does not have to pay for the detailed management, control, and use of the water by the individual consumers. In Italy, these associations, as a rule, lease and operate the secondary canals or main distributaries, used in the distribution of the water purchased, where these distributaries are owned by the Government.

§ 157. **Associations of water users—General association west of Sesia.**—The largest and most successful of these water users' associations in Italy, described in the preceding section,¹ is known as the "General Association West of the Sesia," with its headquarters in Vercelli. This association is widely known, and has influenced irrigation development in many parts of the world. The creation of this association is due to Count Cavour, and its organization grew out of the unsettled rights, the conflict between public and private ditches, between appropriators of water from streams and those who depend on seepage supplies, between individuals using the water from the same streams and between all of those various conflicting interests that always have sprung up and always will spring up in very populous communities and where the water is over-appropriated from the streams. To put an end to these controversies, Count Cavour took a leading part in a movement whereby all of the appropriators and all of the canals in the district were combined under one management. It controls every canal within the district, fixes the price of all water used, manages its delivery, and also exercises a large discretion in the

¹ See Sec. 156.

selection of crops to be used.² The statutes, by-laws, and regulations of the society cover many pages, and space will not permit us to abstract them in this work.³

Some of the powers granted by the Government and exercised by the association seem extraordinary when compared with the practice in the United States. The association has the power of making the laws, in effect, governing the control and use of waters within its territory. For instance, the association determines how many acres in each district may be planted to rice and how many to cultivated crops; also how many acres each individual shall plant to any particular crop. The farmers must plant

² Some idea of the extent of the operations of this association may be had from the following statistics: It has 14,000 members, operates 9600 miles of ditches, has 266 miles of telegraph and telephone lines, supplies water for the irrigation of 141,000 acres of land, and does a business of \$600,000.00 a year. It buys from the Government about 1300 cubic feet of water per second each year. In consideration of this large purchase of water the Government gives the association the cheapest rate for the water and control of all the secondary State canals through which the water is distributed. In addition to the water bought from the State, the association controls and distributes all of the water to private canals and private rights within its territory. Under legislation secured by the society, the owners of these private (not ancient vested rights) rights are compelled to turn the water over to the association because it is illegal for even the Government to sell water to individuals or to any one but to the association within its territory. Holders of private rights are, however, paid for the quantity taken, the price given being 20 per cent less than that paid to the Government. In addition to the water purchased from the State

and from private holders, there are ancient vested rights to 493.4 cubic feet of water per second, the holders of which are entitled to have this water delivered to them free of cost. The association has assumed for the Government the responsibility of supplying these vested rights, the Government furnishing the water at the head of the distributing canals, with 7 per cent added to compensate for losses for seepage and evaporation. In addition to the water purchased, the association collects a large amount of seepage water, which it supplies to its members. Altogether the association distributes to its members about 2275 cubic feet of water per second.

³ See law for the organization of associations for irrigation, translated by R. P. Teele, Expert in Irrigation Institutions, 1907, Bulletin No. 192, Office of Experiment Stations, U. S. Dept. of Agriculture, pp. 35-57; *L'Associazione d'Irrigazione del l'Agro al l'Ovest della Sesia, Capitolato e Statuto per, pel secondo trentennio a partire dal 1 Gennaio 1884, Vercelli: Guidetti Francesco, 1882.*

See, also, *Irrigation in Northern Italy, Part I*, by Elwood Mead, 1904, Bulletin No. 144, Office Experiment Stations, U. S. Dept. of Agriculture, pp. 86-93.

as the association decides, as there is no appeal from the ruling of the superintendent. It takes seven times as much water to irrigate an acre of rice and three times as much to irrigate an acre of meadow as it does to irrigate an acre of land seeded to corn or wheat. Having a definite quantity of water which it must sell, the association requires the farmers to plant crops which will insure a market for it. The man who does not cultivate rice on the land which the association assigns to that crop must pay the same water rent as if he did. Men who waste water or who undertake to make a profit from waste water coming from their own land may be fined. The cost of water to members of the association is determined by adding to the purchase price the expense of the association for administration, maintenance, and repairs. The books are balanced and computations made in October. The assessments are paid after this between November and January, or after the water has been furnished for the season, instead of in advance. This enables accurate computations to be made for that season upon which the assessments are based. In the 50 years that the society has been in operation there has never been an instance of a member failing to pay his assessment within the prescribed time. This is undoubtedly due to the severity of the penalty which the association can impose, and that is to refuse to furnish water to such members thereafter.

The various officers and employees of the association are under civil service regulations. Each one when appointed has to serve a probationary period of two years, and after he has served acceptably for this length of time he can not be discharged except for cause.

§ 158. **General Association West of Sesia—Government.**—The settlement of water disputes among the members of the Association West of the Sesia is worthy of particular notice by the irrigators of the United States. Every question connected with water rates, or with water rights, the relation of individuals to the association or to each other is referred to a court of arbitration composed of three members. This court or board has the authority given by law to punish with fines any members of the association found at fault, and the sentences it imposes are considered as law court sentences and the property of the offender

may be seized and sold in order to carry the sentence into effect. Parties to these trials, if they are so disposed, may appeal from these decisions to the law courts, but in practice there is no disposition to do so. In the 50 years during which the association has been in existence, there has never been such an appeal. On the contrary, the celerity with which decisions are rendered, the cheapness of proceedings, and the popular confidence in the integrity and fairness of the tribunal are so great that the people at large are willing to abide by these decisions and there is a tendency to bring before it other than irrigation matters for settlement. This may be due somewhat to the general desire for self-government, at least, in certain matters.

The success of this association has been both a public and a private benefit. It was organized in 1854. At the outset it was an experiment, not only in Italy but in the world, but that stage has long since passed. The combination of the control of both State and private canals under one authority and control, and the exercise of authority over farmers, who are also members of the association, in the crops to be grown, were both novel innovations. It has given the farmers a secure water supply and at cheaper rates. It has given the State an efficient management of its canals and a stable market for its water supply. Its influence along social and economic lines has been equally valuable. It is really a little republic of irrigation and has trained the Italian farmers to understand and practice self-government and to exercise large administration in public affairs. In form the association has a government something after the order of the irrigation district organizations of California, Colorado, Utah, and other States, but with more power within itself to settle all disputes than any of the above mentioned States. More recently many of the principles have been adopted in the organization of the Water Users' Associations under the projects constructed by our Government under the National Reclamation Act.¹ There is practically no State control within the districts covered by these Italian associations, all of the necessary powers being granted to these districts for their self-government. All the Government does is to sell to

¹ For the Irrigation District Law,
see Chap. 70.

For the National Reclamation Act,
see Chap. 65.

the association a certain amount from the Cavour Canal and attend to its delivery to the laterals of the association.

To those acquainted with the contentions, lawsuits taking years before a final decision is reached, jealousies, and anxieties of irrigators under neighboring canals in our Western States, the fact that this association has managed and controlled its affairs, in maintaining and measuring water for over 9,000 miles of canals for over half a century without a single lawsuit, or an appeal to the courts from the rulings of their own officials, is one of the remarkable features of Italian irrigation. The division of a river and the delivery of the water among the numerous ditches and farms is a complicated problem in transportation and needs the same preliminary organization and the same details in its management as a railroad or express company. It also requires that the farmers shall submit with the same readiness to the regulations of a canal that they do to those of a railway. It needs a public sentiment which will regard the stealing of water as no different from the stealing of a horse, and the opening and closing of head gates without authority as much law breaking as the robbing of a bank or the burglary of a house. After having acquired this public sentiment, laws will soon follow that will govern the subject. Because public sentiment does not so regard the interference with head gates or the taking by one irrigator of the water which belongs to another; and because in many of our States, we have failed to make the welfare of the community superior to the welfare of the individual, there are friction, controversy, and litigation between the farmers of our Western States. Competent investigators say that if this could be done away with, it would add many millions to the selling value of the lands now irrigated, and greatly lessen the operating expenses of canals and ditches. Legislation alone will not accomplish this. It must come through the growth of co-operation among the farmers themselves, as has been exemplified in the results accomplished by the General Association West of the Sesia of Italy. We have no hesitancy in saying that this association, as it has existed for over 50 years, is the best organized, and the best controlled and managed of any irrigation community in the world today, and that, too, regardless of the fact whether governed by statutory laws, or by association rules and regulations.

§ 159. **The lessons to be learned from Italy.**—The lessons to be learned from Italy relative to the government and use of waters are many and of the utmost interest to the American irrigators. In a country of a dense population requiring a most intense cultivation of the soil in order to produce even the requirements of the country itself, the laws governing the use of waters are about as perfect as have been devised to this day. But, not only has Italy excelled in her laws and regulations relative to waters, but also in the scientific construction of her great works for the diversion and use of the waters, and in the practical application of the waters to the soil to secure the best crop results. Already in the Western portion of this country there have been adopted many of the methods of Italy for the measurement of water and other methods upon the practical side of the subject. We also have in our laws and regulations governing the use of water many of the features taken from those of Italy, notably in our laws of State control, irrigation district laws, and the laws and regulations of Water Users' Associations. As the population of the West becomes more dense and there is a greater requirement for more intense cultivation of the land, undoubtedly other features both upon the practical side, and upon the side of the laws and regulations will also be adopted.

The best lessons that we can have are from the actual experience of other countries under similar conditions. And, as has been stated before, Italy is not an arid country, as that term is understood in the West. Crops can be raised there even without irrigation. Therefore, irrigation in Italy is more in the nature of "supplemental irrigation."¹ This is an example to the Eastern and Middle portions of this country. Although crops may be raised there without irrigation, it will be ascertained, as the population becomes more dense, that larger and better crops can be raised by irrigation supplementing the natural rainfall.²

¹ For Supplemental Irrigation, see Sec. 29.

² For Irrigation in the Eastern States, see Secs. 257-260.

CHAPTER 9.

IRRIGATION IN VARIOUS COUNTRIES.

- § 160. Scope of chapter.
- § 161. Modern irrigation in France.
- § 162. Modern irrigation in Spain.
- § 163. Modern irrigation in Algeria. *
- § 164. Modern irrigation in England.
- § 165. Modern irrigation in other countries of Europe.
- § 166. Modern irrigation in Asia.
- § 167. Modern irrigation in Assyria.
- § 168. Modern irrigation in China.
- § 169. China—Methods of irrigation.
- § 170. Lessons to be learned from China—Economy.
- § 171. Modern irrigation in Siam.
- § 172. Modern irrigation in Japan.
- § 173. Modern irrigation on the Islands.
- § 174. Modern irrigation in America.
- § 175. Modern irrigation in Mexico.
- § 176. Modern irrigation in the world—Conclusions.

§ 160. **Scope of chapter.**—In the discussion of modern irrigation in a number of the countries of the Old World in the preceding chapters, we have gone into the subject at considerable length, especially as to those countries which have the greatest irrigation works, and where the science of irrigation is practiced to the greatest extent.¹ We have also discussed the particular features of the laws of these countries governing the waters flowing or lying within their boundaries, and their use. There are many other countries in various portions of the world where irrigation is extensively practiced. But space in this work will permit us to give only some of them a passing notice. This we will do in the respective sections of this chapter, after which we will discuss the subject of modern irrigation in Canada,² and then modern irrigation in our own country.³

¹ See Chaps. 3-8.

² See Chap. 10, Secs. 177-237.

³ For Modern Irrigation in the United States, see Chap. 11, Secs. 238-270.

For Irrigation by Indian Tribes, see Chap. 12, Secs. 271-285.

For Irrigation in the Respective States, see the preliminary sections in Part 14.

§ 161. **Modern irrigation in France.**—In France, irrigation is an insurance on ancient agriculture and the prosperity of great agronomic interests. This country is one of the countries which follows the civil law relative to waters and water rights, or the right to the use of water.¹ Irrigation in this country began at an early date, and in recent years new interest has been taken in the subject, so much so that in many of the departments such as Drôme, Alpes Maritimes, Ande Hérault, Vaucluse, Basses Alpes, Hautes-Alpes, and Loire, many millions of francs have been expended on no less than twenty different canals for waterways and irrigation.

The Forez Canal system, supplied by the Loire River, is the most important. This system irrigates something like 100,000 acres, and was begun in 1863. The National Government gave \$122,200 for it, and loaning the balance to the department at 4 per cent per annum. Each department has its own distinct organization, which corresponds somewhat to the district organizations in the Western States of this country. The water is distributed periodically through pipes and flumes, carrying it to points most convenient for a group of farms, where it is delivered to the farm laterals. It is the custom to serve the water once each week, on the same day and hour, the amount being regulated by the amount purchased. The delivery usually commences on the land farthest from the main lateral, and each proprietor turns off the water from his lateral when he has received the amount paid for, and the next order is then served. The assignment is made out by November 1, and each irrigator is notified of the days and hours when water will be applied to his land. Irrigation at first was almost wholly used on meadows, but of late years it has been used on all crops and orchards as an adjunct to the rainfall. The statutory laws governing the subject of waters and water rights are not as extensive or as specific as are the statutes of many countries, the principal law upon the subject being contained in *Loi sur Régime des Eaux* of April 8,

¹ For Modern Irrigation in Italy, see Chap. 8, Secs. 144-169.

For the Civil Law upon the Subject of Waters, see Chap. 29, Secs. 552-

For Modern Irrigation in Spain, see Sec. 162. 569.

1898,² and the law of June 21, 1865, as amended by the law of December 22, 1888, the same being the law governing corporations and associations.³

By the laws there are very severe penalties provided relative to the taking of water out of turn. By the civil law the water is considered as a part of the property of the entire people, and the appropriating it to the use of an individual, when he has no right, is regarded as an act as contrary to law as stealing, and it is stopped, just as other thefts would be; and, if persisted in, the thief is severely punished. Under the first French statute—passed in 1845—upon the question of rights of way for canals over private land in order to conduct the water for the irrigation of other lands, it was in effect provided that every proprietor who may wish to be served for the irrigation of his property with the natural or artificial waters of which he has the right, can obtain the right of way for these waters over intermediate lands by paying just indemnity. There are excepted from this, lands occupied by houses, pleasure grounds, gardens, parks, and enclosures belonging to dwellings. It was also provided that the proprietors of lower lands will have to receive the waters which percolate from lands thus irrigated, being indemnified if damage occurs. Rights under the Code Napoleon, similar to those of riparian proprietors under the common law,⁴ were provided for, in language as follows: "He whose property borders on a running water, other than that which is declared a dependency on the public domain by Article 538, may employ it in its passage for the watering of his property. He whose estate is intersected by such waters is at liberty to make use of it within the space through which it runs, but on condition of restoring it at the boundaries of his field to its ordinary course."⁵

For the similarity of the Louisiana Code to the above, see Louisiana Code, Article 657, quoted in Sec. 575.

² Loi de 8 Avril 1898 sur le Regime des Eaux, Ministere de L'Agriculture, Paris, Imprimerie Nationale.

³ Loi du 21 Juin 1865 sur les Associations syndicates modifiée par la Loi du 22 Decembre 1888. See, also,

Loi du 22 Mars 1890 sur les Syndicates de communes, Ministere de L'Agriculture, Direction de L'Hydraulique Agricole.

⁴ See Sec. 575.

⁵ Code Napoleon, Art. 644.

§ 162. **Modern irrigation in Spain.**¹—In Spain, irrigation is being practiced each year to a greater and greater extent. It is a much more important feature to the agriculture of that country than it was in the times of the Romans or the Moors. However, many of the works of these ancient rulers of the country still exist, some of which are still in use by the modern irrigators. The civil law is also in force in this country relative to water rights.²

The most prosperous agricultural provinces of Spain are the two in which the soil is probably the poorest in the kingdom. But the valleys of both these provinces are thickly seamed with irrigation canals and the slopes are carefully terraced for cultivation. This explains the paradox. Supplemental irrigation is practiced, irrigated crops being grown alongside of non-irrigated. At this day ancient and modern methods of irrigation seem to go along almost hand in hand. Simple water wheels are in common use to obtain water from wells, horse-power being employed, and small buckets being used for the method of conveyance, after the ancient Egyptian fashion. On the other hand, modern windmills are also in quite common use. The total irrigated area of Spain is nearly 4,000,000 acres, and some of this is under systems of great age and of expensive construction. In Valencia and Catalonia the water comes from swift mountain streams, whence it is conveyed by long canals or "acequias" along the mountainsides, or by lofty aqueducts, to the fields on which it is to be used. Spain is not an arid country; in fact, it is classified among the humid countries. Irrigation is used to supplement the rainfall. The effect of this irrigation is shown by the significant fact that the irrigated portion of Murcia has a population of 1681 per square mile, as against only 101 per square mile from the entire province; while Orihuela has a population of 767 per square mile, as against 194 from the whole province. This shows the accomplishment of irrigation in a humid region.³

The Spanish law upon the subject of waters followed largely the civil law of the Romans as modified by Spanish decree.⁴

¹ See Ancient Irrigation in Spain, Sec. 76.

² See Civil Law, Secs. 570-584.

³ For Supplemental Irrigation, see Sec. 29.

⁴ For the Civil Law, see Chaps. 29, 30, Secs. 570-594.

This law, as described by Eschriche, is to the effect that, where running water flows between the properties of different owners, each may use it for the irrigation of his property or for any other useful purpose. Each, however, may not use it all, but only to the extent of the part that belongs to him, because all have equal rights, and hence they can prevent each other from taking more than their respective shares. If, however, the water flows within a property, the owner may use it as he sees fit, since both the banks are his, and his right is not subject to the interest of a riparian owner on the opposite bank. But in doing so, at the lower side of his estate, he must return the water to its natural or ordinary channel. He has no power to absorb or to entirely consume the water, nor to give it another direction, because the water does not belong to him as a property, but only to the extent of the use which he can make of it as it flows along. As every riparian owner can use the water which passes by the borders of his property to irrigate his land, he is permitted to open drains, irrigating canals, and ditches, and he may even construct a dam or other structures to divert the water and carry it to the place of use upon his own property. In doing this he must not make the water overflow the higher lands, against the will of their owners, or flood the lower lands in a way that may cause injury. Neither can he hold the water back in such a way that the lower owners on the stream are deprived of their rights to use the water for irrigation. No riparian proprietor can construct works on the land of another without his consent, nor can he construct a dam upon such property to cause the water to flow more readily upon his own land. As the rights of all proprietors upon the same stream are equal, the irrigation works ought not to be made, unless in such a manner that the water may be divided equally between them. But the rule of equality in the diversion of the waters is subordinate to the interest of agriculture, which will regularly demand that the greater portion of the water be diverted to the estates of the greatest extent, as the Roman law required. But, as the largest estate does not always need or use the greatest amount of water, the rule of the Romans should not be applied, except under certain restrictions and limitations.⁵

⁵See, also, the rule of correlative rights under Irrigation as a Riparian Right, Sec. 513.

As all upon the stream are entitled to water, therefore, the upper proprietors can not absolutely deprive the lower ones of the use of the water, but they must restore the water to its natural channel after having used it, undiminished in quantity, except as to the inevitable loss caused from the irrigation of the lands. It is also provided that no owners of mills, operated for any purpose, can totally deprive the lower proprietors of the water. A preference right to the use of water is further provided for, to the effect that when it is a question as between agricultural interests and mills in a country where there are few, and on account of the drought they need all the water, the irrigation of the meadows and other properties, as long as the state of drought lasts, ought to be suspended. It will be noticed that this is different from the preference uses to the right of water granted under the statutes of some of our Western States, where the preference right to the use of water is given, first, to domestic purposes, and second, to agricultural purposes. In Idaho, however, the second preference right is given to mining.⁶ In many of the districts of the country the old Moorish laws are followed as to the diversion of the water and its application to a beneficial use. That law is more after the Arid Region Doctrine of appropriation in vogue in the Western States of this country. Its rules are better applicable to an irrigated country than are either those of the common law or the civil law.⁷ The agricultural interests of Spain have prospered under these laws, and the Spanish are considered among the best irrigators in the world, as is well illustrated in the Spanish-American countries in America.

§ 163. Modern irrigation in Algeria.—Even in that part of Africa which was at one time considered the most dangerous, desolate waste upon the face of the globe—the great Sahara Desert—this art of irrigation within the last few years has brought about changes which fifty years ago would have been

⁶ For Preference Right to the Use of Waters, see Secs. 792-794.

⁷ For the Common Law of Riparian Rights, see Chaps. 21-28, Secs. 450-551.

For the Civil Law, see Chaps. 29, 30, Secs. 552-584.

See, also, Sec. 76, for the old Moorish law.

regarded as absolutely impossible. This desert is far from flowing streams, and the water is obtained by boring artesian wells. For the purpose of this work we will select but one section of that country, which is the most remarkable example of reclamation by means of artesian well water that can be found in the world, but which is found in the desert itself in the provinces or departments of Algeria, under French rule. The area officially given of French Algeria is 184,465 square miles. The outlying portion is put at 135,000 square miles. In this total of over 359,415 square miles, one-half belongs to the Sahara or desert portion. The European population in 1887 was about 250,000; the natives and naturalized were 3,228,549, making a total of 3,478,549. Cultivation by means of flowing well waters has been sedulously fostered by the French Colonial Government, for both political and economic reasons. Such wells, as a means of reclamation, began systematically to be bored in 1857, the French engineer, M. Jus, having demonstrated in 1856 that the desert was endowed with large supplies of underground water. The total number of wells bored since that date in the departments of Algiers, Oran, and Constantine is stated at 13,135. These wells range from 75 to 400 feet in depth, and the low pressure common to the majority of them forces the water over the small board casings to a height of about two feet above the ground. The waters are then collected in small ditches, which convey them to the vineyards, date trees, and fields of millet, wheat, and other grain, which comprise the chief products of that country. In all, about 12,000,000 acres have been reclaimed in this way. The Government bores at least one-tenth of the whole number. As an illustration of the reclamation brought about by this method of irrigation by artesian wells, the following figures from a report in 1885 will be of value, but they relate solely to the cultivation of the grape for wine-making purposes: In the province of Algeria there are 60,382 acres; in Constantine, 25,021 acres; in Oran, 26,114 acres. Thus, when we see what irrigation has done in Africa, notwithstanding its burning winds and scorching sun, its possibilities seem to be almost limitless. In Algerian Sahara, since the sinking of the first artesian well in 1848, at Biskra, the work has gone forward down to the present time. In 1875 there were 615 wells put down, having an

average depth of 145 feet; 404 of these wells are in the province of Constantine, 194 in the province of Algiers, and fifteen in that of Oran. It will be noticed that the depth of these wells is comparatively shallow. Another strange thing about these wells is that their waters contain nitrates, and irrigation with them has brought upon the desert sands wonderful oases, upon which grow the date palms and many other fruit trees.

§ 164. Modern irrigation in England.—In England itself, that island of humid atmosphere and low altitude, surrounded by the sea, and having what one would think a rainfall sufficient to be absolutely independent of any artificial distribution of water for raising crops, there are numerous water meadows, which have been irrigated so long that the time at which the systems were laid out and the canals and ditches dug is unknown. It is thought that some of these were constructed under the Romans, while others are supposed to have been introduced from the Netherlands. These canals can be found in Berkshire, along the Kennet; in Derbyshire, in the valley of the Dove; in Dorset, in Gloucestershire, along the Churn, Severn, Avon, Lidden, and other streams; in Hampshire, along the Avon, Itchen, and Test; in Wiltshire, in Worcestershire, and in Devonshire. In all these what is known as supplemental irrigation is in vogue.¹

However, the Assistant Secretary of the Board of Agriculture and Fisheries, speaking of the subject of irrigation in a letter to the author, under date of May 23, 1908, says: "For physical reasons, the question is relatively of small importance in this country."

Of course, the common law is followed in the country of its origin, and irrigation by one riparian proprietor is allowed, provided that the equal or relative rights of all the other riparian owners upon the same stream are not injured or interfered with.²

Although England, in the home country, practices irrigation

¹ For Supplemental Irrigation, see Sec. 29.

For Ancient Irrigation by the Romans, see Sec. 75.

² For the Common Law of Riparian Rights, see Chaps. 21-28, Secs. 450-551.

For Irrigation as a Riparian Right, see Chap. 26, Sec. 498.

For the right of irrigation in England, see the Chronological Table and Index of Statutes, under the subjects of Irrigation, Canals, Rivers, Land Improvement, and Drainage.

in but a limited way, and has paid very limited attention to irrigation laws, it is from physical reasons only. There, it is more a question of drainage than it is the diversion of water from the natural streams for the cultivation of crops. However, in the English Colonies, and in countries controlled by the English, where the physical conditions are different, and there is a hot, dry, and arid climate, as we have seen, they are the greatest irrigators on earth.³

§ 165. **Modern irrigation in other countries of Europe.**—There are many other countries of Europe and Asia that have either revived an ancient agriculture by irrigation, or have more recently adopted irrigation as the surest method of bringing great results, and as a safeguard against famine in thickly populated districts. This has been done either primarily as an absolute necessity, or as supplemental to the rainfall. Without going into great detail in this work as to the history of those countries in this respect, I will, in passing, name a few of those countries.

In Switzerland, we are surprised to find, even in the higher altitudes, the mountain streams formed by the melting of the snow are turned into ditches and conducted thereby to the meadows, where the waters are used for irrigation. And, in the lower valleys, crops are cultivated by this means.¹

See, also, the Report of the Select Committee on Canals, 1883, House of Commons, No. 252 of 1883; A Dissertation of the Common Law of Waters, by Musgrave, 1890; Law of Waters, Sea, Tidal and Inland, by Coulson & Forbes, 1902.

³ For Irrigation in Egypt, see Chap. 4, Secs. 88-102. For Irrigation in India, see Chap. 5, Secs. 103-118; in Australia, Chap. 6, Secs. 119-130; in South Africa, Chap. 7, Secs. 131-143; in Canada, Chap. 10, Secs. 177-237.

¹ For the laws of Switzerland upon the subject of the use of water, see Loi du 18 février 1901 et Règlement du 26 avril 1901 sur l'utilisation des lacs et cours d'eau dépendant du domaine

public, Lausanne, Imprimerie Lucien Vincent, 1901; Loi Generale sur les Routes, la Voirie, les Constructions, les Cours d'eau les Mines et l'Expropriation, du juin 1895, Genève, Imprimerie L. Bron, 1906.

See, also, upon the subject of waters: Gutachen und Bericht über die Stauverhältnisse des Sihl-Sees erstattet an den Bezirksrat von Einsiedeln und die Maschinenfabrik Orlikon durch die in Art. 4 der vom 30. juli 1907 datierten Zusatz-Bedingungen zur Etzelwerk-Konzession vorgesehene Kommission, Marz 1908, Bern, 1908; Pour la votation populaire du 26 mai 1907, Loi concernant l'Utilisation des forces hydrauliques, Message du Grand

In Belgium, there is a great system of canals known as de la Campine, which has an aggregate length of over 400 miles, the construction of which cost over \$6,000,000. This is used both for navigation and irrigation. An area of about 7,000 acres of barren soil, which produced absolutely nothing before irrigation, has been reclaimed, and now produces good crops.

In Bavaria, meadow irrigation is common, as well as irrigation for many other crops. There are many current wheels along the streams, constructed something after the order of the Persian water wheels. Irrigation in this country has been found to be a very profitable adjunct to the rainfall.

In Denmark, there is a network of something over 150 canals, belonging to one system, and carrying over 30,000 second cubic feet of water. By this means over 40,000 acres of sandy heath lands in Jutland have been reclaimed and its value greatly increased.

In Austria-Hungary, irrigation is practiced in many sections of the country: In the Mattig Valley, in Upper Austria; in Lower Austria; in Carinthia, near Klagenfurth; in many of the upper and central valleys of the Tyrol; in the Bistriz Valley, and in Bohemia, in the valley of the Elbe. In these countries more modern systems of irrigation are in existence. Owing to the fact that the land has plenty of fall, the water is taken from the streams by dams, and runs by gravity, directly upon the fields. There are also many reservoir systems whereby the water is

Conseil du Canton de Berne au Peuple Bernois; Zur Boltsabstimmung vom 25 October 1908. Bundesbeschluss betreffend die Gesetzgebung des Bundes über die Nutzbarmachung der Wasserkraft und über die Fortleitung und die Abgabe der electrischen Energie, Bom 26 Juni 1908; Der Grosse Rat des Kantons Graubünden an die ehrfamen Germeinden desselben, 18 November 1905; Gutachten über die Wasserverhältnisse des Etzelwerk-Projektes erstattet an die Etzelwerk-Kommission, von Ing. J. Epper, Chef des eidg. hydronetrischen Bureaus, 10 November 1904, Druck von Aschmann & Scheller, Zurich; Die Wasser-

kraftverhältnisse im Puschlav. Gutachten erstattet an die gemeinde Puschlau und die Keartwerke Brusio, von Ing. Dr. J. Epper, Chef des eidgenossischen hydrometrischen Bureaus, Bern, 1907, Buchdruckerei Rosch & Schatzmann; Die Abalation der Rhone in ihren Walliser Einzugsgebiete im Jahre 1904-05, Inaugural-Dissertation der Philosophischen Fakultat der Universitat Bern zur Erlangung der Doktorwurde vorgelegt von Erich Uetrecht, aus Minden (Westfalen), Bern, 1906; Einige gesetzgeberische Erlasse betreffend die Asunutzung von Wasserkraften, Bern.

stored during the times of flood and used during the dry seasons. There are also many water wheels and windmills to be found along the streams, whereby the water is pumped up and then run upon the fields.

In many other parts of Europe, water has been for many years and now is used for irrigation. The tendency in many of these countries is to modernize the ancient systems and to adopt improved methods. In some sections the most modern pumping plants and machinery can be found. Also in many countries these enterprises are fostered by the respective Governments, by the way of laws enacted for their protection, and by the loans of money to assist in their construction. In other sections by individual efforts alone great irrigation enterprises have been promoted and capital supplied for the construction of the works. These enterprises, in the thickly settled countries of Europe, have been and are bound to be in the main successful.

§ 166. **Modern irrigation in Asia.**—Passing to the continent of Asia, we find irrigation practiced over a wide extent of territory in many countries other than those described at length in this chapter.* It is largely carried on by individual effort, and is widely and irregularly scattered. Indeed, it must be said that all through Asia and Asia Minor isolated and individual irrigation plants are to be found, which in the aggregate would sum up a grand total. It is to be found in Corea, Afghanistan, and parts of Russian Central Asia. In Thibet and on the Pamier, “the roof of the world,” are to be found systems of irrigation that have been fraught with such difficulties, in taking out the water and conducting it to the places where it was needed, that few Americans would think of undertaking the task.

In parts of Armenia, where there is an abundance of subterranean water, it is the common practice to dig a line of wells extending down a slope and then, by connecting the bottoms of these wells by a tunnel leading out upon the surface at a lower level. By this means the water becomes available for irrigation, and is collected in reservoirs, whence it is conducted by ditches to the fields where it is used. The same practice is also in vogue in other parts of Central Asia.

Irrigation in other portions of Asia will be discussed in the following sections.¹

§ 167. **Modern irrigation in Assyria.**—The whole of Northern Assyria, or Syria,¹ including the vast plains lying in the districts of Aleppo and Adana, are possessed of excellent soil and immense courses of water, including the Euphrates, the Orontes, and the Tigris Rivers. This section of the world was called in the centuries that are passed “the granary of Europe.” For the past few hundred years, however, owing to neglect, these vast and semi-arid regions have been unproductive and sterile. His Excellency Raif Pasha, when he took over the government of this province, determined that efforts should be made to rescue these lands. Throughout the whole of the district he saw that there was plenty of water. But, during the ages past, the most crude methods were employed to take out the water upon the land. These old methods might be sufficient for the present needs of the population, but in an agricultural country the people could not be really prosperous and keep pace with the march of time, unless that agriculture was worked in its highest efficiency. Hence the old methods of diverting the water and running it upon the land for irrigation must be replaced by more modern ones.²

¹ See Secs. 167-173.

For Modern Irrigation in India, see Chap. 5, Secs. 103-118.

¹ “Syria” is merely an abbreviation of “Assyria.”

For Ancient Irrigation in Assyria, see Sec. 72.

² As described by E. Rahib Raif of Aleppo, Turkey, in his picturesque language: “From the dawn of human ingenuity, for centuries unnumbered, wooden water wheels of fearful form and cumbrous weight, huge monsters which gave grudgingly, were used along the river banks, requiring high dams and constant repairs, much attention for meager results. With what success? In winter, a heavy, sullen, groaning revolution, turning at

the will of the capricious currents, and at a time when water, in the form of rain, was showered down, and the water from the streams was not needed for irrigation. In the summer, when the heats were come, the dried earth cracked and crying, they would stand mockingly motionless in their sluggish currents, seeming to ridicule the puny efforts of primitive man. Yet this, in its primordial state, was incomparably superior to the systems used on land where no running water was to be had, for the working of these cumbrous machines. Here the water had to be drawn by hand, or else a horse or an ox would be harnessed to a rope and by its weight and the declivity of the ground pain-

His Excellency first gave his consideration to the most urgent wants—the lands which no streams watered as they passed. Here new and modern appliances were called into requisition. Water could be found by digging shallow wells, and the air at least was at command and could be utilized. And then a sudden transformation seemed to break through the silent sleep of ages. On all sides steel windmills rose, new patent water-lifts replaced the old wooden “norias,” chain and centrifugal pumps were called to lend their aid to cultivate the lands. Simplicity, combined with efficiency, began to call the farmer from his apathy and dullness. Great profit came from his efforts in a financial way. And it is now proved that the farmer can become, in a great measure, independent of the caprices of drought and heat. And that country, which had lapsed into a somnolent state, has awakened to the new possibilities. The history of Assyria is the history of many of the old countries of Europe and Asia in this regard.

§ 168. **Modern irrigation in China.**—In China, for hundreds of years, irrigation has had a very extended and general distribution.¹ The Grand or Imperial Canal system was laid out primarily for navigation, but it is also in general use for irrigation. The rivers of China are her glory, and there are few countries in the world so well watered, and none with such splendid transportation facilities. Of these the Yang-tse-Kiang is much the largest, flowing through extensive fertile plains and finally emptying into the Eastern Sea, after traversing a distance of over 200 miles. Its discharge is estimated at over 1,000,000 cubic feet per second. The Hoang-Ho or Yellow River is nearly as long as the Yang-tse-Kiang; its current is very rapid and its course sinuous, and it is noted for its frequent and violent floods. The Pearl or Canton River is not nearly so large as the others, but

fully draw up an insufficient supply of water, which seemed to rather irritate than saturate the ground. Or the ‘garaffe’—the wooden noria (a Persian water wheel) that perpetual circle of a beast condemned to tread its round from day to day—rotten planks, rotten cords, loss of time, loss of en-

ergy. This state of things might have boasted of its results in times gone by, but it must abandon the field to the march of progress and science.”

¹ For Ancient Irrigation in China, see Sec. 69.

is of great importance for navigation. At some points it spreads out into large lakes; in others it passes between narrow gorges which, if dammed, would afford large storage capacity for irrigation. The Chinese, however, have not worked out the great possibilities of modern irrigation systems in their different phases as completely as they can be found in other countries, or as would be expected of such an agricultural people. Agriculture, even at the present time, is most primitive, and the wonder is how such an immense population can be supported from the soil, until the great economy practiced in all things is understood. On the Great Plains every available foot of land is utilized for growing something and every particle of fertility returned to the soil.

The Great Plains of China is one of the most wonderful sections of the world. It is over 700 miles in length and varies from 200 to 400 miles in width, occupying the northwestern portion of the empire, and containing about 250,000 square miles of wonderfully fertile soil. It is very low and flat, and has not sufficient fall to run the water upon the land. There are in this vast area thousands of acres of land that lie under water a great portion of the year, and are therefore not cultivated. The most interesting feature of this plain is the enormous population it supports. There are not less than 200,000,000 human beings upon the Great Plains, making it the most densely settled of any part of the world.

§ 169. **China—Methods of irrigation.**—The methods of irrigation used by the Chinese at the present day are ancient and crude. In the mountainous districts, of course, they can, and do divert the course of the streams into the irrigation ditches by making small dams; but on the Great Plains this can not be done, owing to the flatness of the country. In this part of the country the best method pursued is to level small plats of land, containing about one-third of an acre, and run ditches through and around them in such a manner that, when the ground is wet enough, the surplus water can be run into an adjoining patch, which, as a general thing, is a few inches below the level of the first. Thus, throughout the Great Plains of China, patches or strips of land may be seen, one a trifle above the other, made so, artificially, for the purpose of utilizing a single water course

to the greatest possible advantage. Archimedean pumps are used in some places to raise the water from the creeks, rivers, and canals. In other places, and to a greater extent, troughs about fifteen inches wide, with four-inch sides; and at the end of these troughs there is a revolving shaft with ratchet wheels, over which passes an endless belt, with conveyors or buckets about fourteen inches apart. The shaft of the upper ratchet wheel is attached to an upright shaft. These machines are worked by buffaloes, and often by human labor, a man working a crank with his feet, something after the manner of riding a bicycle. The most primitive and laborious method is the ancient well sweep, such as is seen today on many an old New England homestead. The most common way of raising water for irrigation purposes, however, is by hand. Two persons, oftentimes children, are placed on the banks of a stream, each with a rope about five feet long; one end of each of these ropes is attached to a bucket of about four gallons' capacity. The bucket is dropped into the water and filled; then, by a horizontal pull on each side, it is raised to the distributing tank and emptied. Two girls thus at work can often raise from sixty to eighty gallons per minute.¹ There are wind-mills in China, such as they are, but they are like nothing that can be found elsewhere upon the face of the earth. They are made of a number of lateen sails attached to a framework, and revolve horizontally about a central bamboo shaft. But a small amount of water can be raised in this manner. One of the most common methods is by means of the water wheel, which is used where there is a current in the stream and where the land to be watered is well above the channel of the stream. The wheel is turned by the force of the current and is sometimes thirty feet high, its buckets being sections of bamboo, which are raised by the motion of the wheel and empty their contents into troughs or ditches. After the water has been raised by any of these methods, often hollow bamboo pipes or tubes are used for distributing the water over the fields. They rest upon wooden supports and branch in every direction from the source of supply.

¹ It will be noticed that some of these methods greatly resemble the crude methods of the modern Egypt-

tians. See *Modern Irrigation in Egypt*, Sec. 92.

See *Irrigation and Its Many Methods*, Sec. 30.

However, in many sections of the country the water for irrigation is carried considerable distances in buckets on a yoke placed on the shoulders of men.

That the Chinese are always slow to adopt new methods, and that they cling to their old and crude ideas, even when the example is set for more modern ones, is illustrated by the market gardeners who have come to this country. In many places in this country they use the same methods as those described above in vogue in their own country. There is one thing that they have taught the people of the eastern portion of this country, and that is the value of irrigation. Many of the market gardens along the bottom lands near our Eastern cities have a system of irrigation. The result is, that an intense cultivation and a much greater amount of products upon the same tract is made possible; in many instances a number of crops are raised upon the same tract during the same season.

§ 170. Lessons to be learned from China—Economy.—The only lesson the American irrigator can learn from the Chinese is in the matter of economy, and the conditions of this country have not reached the point when such extreme economy as practiced by the Chinese is necessary. However, in many sections of this country, where the water is scarce, and it is a question of the saving of water or of preventing waste, the examples set by the Chinese might well be followed.

The Chinaman fertilizes not merely once a year when putting in his crop, but from time to time until it is nearly ripe. The earth that is scooped up from the bottom of the canal is hardened in the sun, pulverized, and put on the fields. The entire surface of many of the rice fields is smoked and burned by straw. This is a laborious but very effective method of strengthening the soil, and it also kills the weeds. Of course, all the manure of domestic animals is made the most of. The value of ashes as a fertilizer is well understood, and the housewife carefully saves them, selling for a good price or using them upon the family fields. Even the sweepings of the houses are saved by these thrifty economists. The value of bones is understood, and they bring a high price. They are pulverized in a stone mortar, with hand or foot power, and used for certain soils and crops. Vats of cement or stone are

everywhere, and into these vats are thrown straw, vegetable tops, leaves, and whatever refuse there is that is not wanted for fuel or for other commercial purposes. Water is then poured in, and when the refuse is entirely rotted this water is carried in buckets and sprinkled on the growing rice and vegetables. This gathering up all the filth and using it to produce more food serves a double purpose. Not only is the productiveness of the soil preserved, but a degree of cleanliness is maintained that makes life possible. With the utter ignorance and indifference of the Chinese to cleanliness for the sake of comfort and health, if it were not profitable for them to clean up their houses and streets they would become so filthy that pestilence would sweep the population off the earth. In proportion to the density of the population the value of all fertilizers increases, so that the very crowding of the people tends to improve their cleanliness. Some of the cities are fairly clean and it pays the people to clean up the streets and houses and carry the dirt off to their fields. The farmers are willing to pay for the privilege of buying all the refuse of a city at a good price. Bean-pulp and peanut-pulp are also purchased and used very extensively. The expense of all this, it is plain to all, must be very great. The Chinese farmer can tell you exactly what will be the difference in his crop from using a certain fertilizer and how much is necessary to bring the best results. He calculates upon spending for this purpose alone at the rate of \$12.00 (Mexican) a crop an acre, or ordinarily \$36.00 a year for his three crops.

§ 171. **Modern irrigation in Siam.**—Like China and Japan Siam has also been the home of irrigation for many centuries. About one-half of the whole country is under cultivation, and of this area four-fifths are under irrigation. A great deal of rice is raised by this method. The fields are supplied with water from canals and ditches, which branch from the rivers in all directions. The main canals are constructed by the Government but the smaller ones, those supplying the individual fields directly are made by the owners of the fields benefited. The country although not so densely populated as either China or Japan is largely under cultivation, and exports a large amount of prod

ucts to the neighboring countries. This could only be accomplished through the system of irrigation that is practiced.

§ 172. **Modern irrigation in Japan.**—In Japan, as well as in China, irrigation has been practiced from time immemorial. But, unlike the Chinese, the Japanese do not cling so closely to the ancient customs and practices. They are always ready to adopt better methods and modern machinery, and are the most progressive people of the Orient. In the matter of irrigation they have always been progressive in their methods, and within the last few years they have sent representatives to other countries to study the question, and today rank among the foremost of nations in the matter of the conservation of water and its economical distribution. It is estimated that not less than fifteen millions of acres are under irrigation. On all of the islands the greatest possible care is exercised to utilize the water of all the short streams. On the slopes and in the narrow valleys the lands are carefully leveled and terraced, to avoid washing and to cause the water to spread evenly over the surface of the soil, and thus to become more effective. On the margins of the terraces are constructed slight ridges, which are given permanency of form by being set out to shrubbery and grass; these are the boundaries and footways between the patches of ground, as well as barriers against the washing of the water. Dams are used upon the streams, and the terracing has been such that the water can be spread out upon the cultivated fields and gently let down to lower levels and back into the main channels of the streams, after having done its work of saturating and fertilizing the fields. In times of high water the systems are so perfect that the water is spread throughout the reservoirs and ditches, thus lessening the danger of flood, as well as accomplishing its work of irrigation. In order that nothing shall be lost by washing, there are constructed ditches and canals around the lower margins of the terraced areas, which conduct the water to the lowest corners, where it passes to the next terraces below, but first flowing through settling basins, partly filled with rubbish, which collects the silt. This is afterward returned to the land for fertilization.

Upon the whole, although the streams of Japan are small and

swift, and owing to the heavy rains, there is great danger at times from floods, the Japanese seem to have made the most of their natural advantages in the matter of irrigation.

§ 173. **Modern irrigation on the Islands.**—There are many islands all over the world owned by various nations, upon which irrigation is practiced to a great extent.

On the Island of Madagascar, off the east coast of Africa, there are extensive systems. At first it was used only for rice culture, but within recent years it is being used in the cultivation of all fruits and cereals.

On the Island of Maderia off the west coast of Africa, the irrigation systems are both elaborate and extensive, covering over one-half of the entire island. Nature, on that island, has provided many catchment basins or reservoirs; many reservoirs have also been constructed, both by the Government and by individuals. There are also many springs and wells upon the island. Canals have also been constructed with great care and skill, some of them being seventy to eighty miles in length. Besides the public works, the farmers have on their lands reservoirs into which they collect their share of the water when it is delivered to them from the public ditches, and from these reservoirs they use the water as it is needed.

Upon the Islands of Hawaii the art of irrigation is practiced with great skill, and has been so practiced for many years. As these islands belong to the United States, they will be treated of in a separate chapter.¹

In Sicily nearly all fruit culture is carried on by irrigation. As this island is a part of Italy, the system in vogue has been treated of in other sections.²

On the Island of Java, too, irrigation has been extensively practiced for many years, and all kinds of crops are grown by this method.

On the Island of Lombok, which lies to the east of Java, there

¹ See Hawaii, Part 14.

² See Ancient Irrigation in Italy, Sec. 73.

See Modern Irrigation in Italy, Secs. 144-159.

See, also, Carta Idrografica d'Italia, Relazioni, Sicilia, 1891, Roma: G. Bertero; Bollettino Ufficiale del Ministero d'Agricoltura, Industria e Commercio, Roma, giugno 1905, p. 149.

is the most intense cultivation of the land by means of irrigation. Here, many hundreds of square miles of irregularly undulating country have been skillfully laid out and terraced, and canals and ditches so run over it that every portion can be irrigated or drained at pleasure. It is said that the system and care with which the land is laid out, and the amount of labor that is expended upon it, exceed any other tract of equal extent in any country of Europe.

On the Island of Ceylon, under the British authorities, a decided effort has been made, and is still being made, to modernize the ancient irrigation systems, which theretofore had been allowed to fall into ruins. New canals have been built, new reservoirs constructed, and, besides this, the ancient canals and reservoirs have been modernized and are now being used. Over 1,000 miles of new canals have been constructed, and over 3,000 reservoirs, small and large, have been restored.

Upon many other islands, too numerous to mention here, throughout the entire world, the science of irrigation is practiced wherever the opportunity affords, and crops can be better raised by that means. The laws governing the waters on these islands, and its use, depend largely upon the laws of the country to which they respectively belong. But, on many of these islands, especially those owned and controlled by England, the laws of the mother country are abrogated, if found necessary, and the water taken from the streams either by the Government itself, or by private parties, and utilized to the utmost possible extent, regardless of the common law of riparian rights. This, as we have seen, is also the case in all countries controlled and governed by the English, and also the case in all English Colonies, with the exception of South Africa.³

§ 174. Modern irrigation in America.—Coming to the American continent, we find that many countries are practicing irrigation, besides the United States. In all of these countries, we may say, plans are being laid for more extensive operations. Even in the semi-arid regions we find that the application of water, by way of supplemental irrigation, is becoming each year

³ For Irrigation in Egypt, see Chap. Chap. 6; in South Africa, Chap. 7; 4; in India, Chap. 5; in Australia, in Canada, Chap. 10. "

more and more in vogue. It is recognized as the best insurance that a region can have for a regular crop return. Many regions are counted as arid, and in these, of course, irrigation is an absolute necessity; and in these regions some of the best returns are to be found. The Governments of these countries have taken the matter in hand, and either are constructing the works at their own expense, or are so fostering private enterprises that the work is going forward without intermission.

In all the Spanish-American Republics in Central and South America, irrigation is practiced to a greater or less extent. And, as has been said: "The Spanish are the best irrigators on earth." This is true to a certain extent, and they are among the best irrigators.¹ The laws of these countries follow largely the civil law, except as modified by local statutes.²

During the past twenty years our neighbors on the North, in Canada, have constructed great irrigation projects and have adopted laws suitable to the conditions of the country in that respect, and that, too, regardless of the common law of riparian rights of the mother country. But irrigation in Canada and the laws of waters will be discussed in another chapter.³

§ 175. Modern Irrigation in Mexico.—Our neighbors on the South, in Mexico, have continuously practiced irrigation since the time of the Spanish conquerors. In many portions of the republic great diverting and conveying works have been constructed for this purpose, and this construction is still going on. And, in this respect, the Mexican engineers are second to none in the world. The law governing the subject of waters and their use is largely based upon the civil law.¹ However, this law has been modified in many respects by the more modern Mexican statutes. We shall discuss the law of waters in force in Mexico in our chapter upon the civil law.²

¹ For Ancient Irrigation in Peru, see Sec. 78.

² For the Civil Law, see Chaps. 29, 30, Secs. 552-584.

³ For Irrigation in Canada, see Chap. 10, Secs. 177-237.

¹ For the Civil Law, see Chaps. 29, 30, Secs. 570-594.

² For Ancient Irrigation in Mexico, see Secs. 79-85.

See, also, *Leyes sobre Vias Generales de Comunicacion y Aprovechamiento de las Aguas, de Jurisdiccion Federal, Mexico, 1894; Leyes Federales: Tierras, Aguas, Colonizacion, etc., in the series "Coleccion de Co-*

Although irrigation has been practiced in Mexico for many centuries,³ it was not until the more recent years that the greater projects were constructed. These operations must be under concessions granted by the Government, and many of these have been granted both to home and foreign capital. These projects have afforded a new opening for the investment of considerable money from this country, and the opportunity is being taken advantage of by a number of persons from the United States. The greatest drawback to the agricultural development of Mexico has been that the land of the country has been held by comparatively few people. These estates are vast and almost feudal in their pretensions. This was one of the main causes of the Mexican revolution of 1911. The signs of the times are now favorable

digos y leyes Federales," published by Herrero Hermanos, Editores; 10, Callajon de Santa Clara, 10, Mexico.

See, also, the following *Diariis Oficiales*:

No. 38. Tuvo primera lectura y se mandó imprimir el dictamen emitido por las Comisiones unidas 1a y 2a de Puntos Constitucionales, que consulta se adicione el artículo 72 de la Constitución Política de la República, en los términos siguientes:

"Fracción XXII . . .; para definir, determinar cuáles son las aguas de jurisdicción federal y expedir leyes sobre el uso y aprovechamiento de las mismas."

No. 40. Se dió segunda lectura al dictamen subscripto por las comisiones unidas 1a y 2a de Puntos Constitucionales que termina con el siguiente.

PROYECTO DE LEY:

Artículo único—Se adiciona el artículo 72 de la Constitución Política de la República, en los términos siguientes:

Fracción XXII . . .; para definir, determinar cuales son las aguas de jurisdicción federal y expedir leyes sobre el uso y aprovechamiento de las mismas.

18—Vol. I—Kin. on Irr.

La Secretaría manifestó á la Cámara que las Comisiones dictaminadoras se habían acercado á la Mesa solicitando que á este dictamen se le dispensara el último trámite que le faltaba y se pusiera luego á discusión.

La Cámara accedió á lo solicitado por las comisiones ponentes y se puso luego al debate. Sin éste, el artículo único fué declarado con lugar á votar en lo particular en votación económica, y en votación nominal se aprobó por unanimidad de 125 ciudadanos diputados; mandándose comunicar á las Legislaturas de los Estados para los efectos constitucionales.

La Secretaría suplico á los ciudadanos diputados se sirvan concurrir mañana con toda puntualidad á las tres y media de la tarde.

Se levantó la sesión.

Eutimio Cervantes, diputado presidente.—*Daniel García*, diputado secretario.—*José B. Carral*, diputado secretario.

Confrontada—*Emilio Cortés*.

Es copia. México, Diciembre 14 de 1907.—El Oficial Mayor, *Agustín S. de Tagle*.

³ For Ancient Irrigation in Mexico, see Sec. 79.

for a general breaking up of the old conditions, and that an era of general development is about to set in that will make this country a marvel in agricultural productiveness. Already, in many localities of the republic, a good start has been made in this direction. Scores of enormous tracts of land in the States of Tamaulipas and Vera Cruz, and on the Isthmus of Tehuantepec have passed into the ownership of Americans and capitalists of other countries, and have been divided up into small tracts and sold to settlers.

One of the largest irrigation projects now in process of accomplishment in Mexico is that for the utilization of Lake Chapala for a reservoir, by means of which it is expected to irrigate 500,000 acres of land in the immediate vicinity.

The Federal Government has also taken steps to improve conditions in a most substantial manner. The valley of the Nasas River is far famed for the richness of its soil. It is the chief cotton producing territory of Mexico. However, here nothing can be grown without irrigation, and the fact that during several months of the year the bed of the river is dry, has led the Federal Government to take steps to afford permanent relief to the lands already under cultivation and to water all of the available land along the river. The Government has already let the contract to an English company for the construction of a great dam across the Nasas River, at a cost of \$12,500,000, Mexican money. It is said that the proposed dam will be one of the largest in the world, and will afford storage capacity for water sufficient to irrigate the whole lower valley of the river. It is understood that, although the Federal Government will bear the original cost of building the dam and the construction of the other part of the system, the land owners, to be benefited thereby, will eventually be made to reimburse the Government for the financial outlay. In fact, the general scheme is very much after those projects which are being constructed under the provisions of the National Reclamation Act by our own Government.⁴

It is in the vast central plateau of Mexico where almost unlimited opportunities are offered for the establishment of extensive irrigation projects, and considerable attention is now being given to this character of industrial development. In the more

⁴ For the National Reclamation Act, see Chap. 65.

northern part of the plateau the rainfall is so deficient as to make it impossible to grow crops without irrigation, except in the more particularly favored sections. In the southern portion, where there is a well defined rainy season, the precipitation is ample; but, as is the case in all countries of this nature, it lacks evenness of distribution. It is claimed that if storage reservoirs were constructed, and the surplus water distributed over the land, it would be possible to grow crops during the whole of the year and enormously increase the revenue of the land. In the northern portion of this plateau region there are already a number of large and modern irrigation systems, but for the most part the work is carried on by the natives, who still cling to the ancient methods of lifting the water from wells, streams, or reservoirs by various kinds of cumbersome water wheels or other primitive devices.⁵ These primitive devices are made of wood, roughly cut and hewn, and put together with wooden pegs or tied with leather and fiber. They are operated usually by man or horse-power, but usually the former. In most cases one or two natives to each wheel do the water lifting by the exercise of their arms and legs. Although, in many localities, Americans have installed modern gasoline or steam pumps for lifting the water, the natives are slow to adopt them, and prefer the primitive methods.

Everything being considered, it may be well said that Mexico is about to enter an era of wonderful agricultural development, and that if liberal encouragement is continued to be offered by the Federal Government, it promises, within the next decade, to be one of the great agricultural countries of the world.

§ 176. Modern irrigation in the world—Conclusions.—Enough has been said to show that in the countries of the Old World, irrigation has been practiced for many years, for two main reasons. In the hot, dry, and populous countries, like Northern Africa, India, and China, the art of irrigation is a matter of great National precaution to ward off famine, which would surely follow its abandonment. The waters of the rivers, which would naturally waste themselves in the sea, are diverted from their courses and conducted over the land for the irrigation of crops to ward

⁵ For Irrigation and Its Many Methods, see Sec. 30.

For Methods of Taking and Applying Water to Egypt, see Sec. 92.

off famine, and to aid in saving starving humanity. In other countries that are more favorably situated, so that the annual precipitation is greater, like Italy, France, and Spain, and even England, irrigation is practiced, in a supplemental way, for the purpose of adding to the crop return, and, incidentally thereto, to the profits of the undertaking. But even in India and Egypt, the Governments seek to and do reap a profit from their investments, and that, too, even from the canals constructed primarily to ward off famine, and called "protective works."¹ It therefore follows that the motives for the practice of irrigation in any country may be many, but the great and underlying motive of all is to enlarge the capability of supporting a larger population upon a certain area of land, or in a certain country.

¹ For Modern Irrigation in India,
see Secs. 106, 107, 118.

For Modern Irrigation in Egypt,
see Chap. 4, Secs. 88-102.

CHAPTER 10.

MODERN IRRIGATION IN CANADA.

- § 177. Scope of chapter.
- § 178. The English Colonists as irrigators.
- § 179. Particular features of the country.
- § 180. The Government of Canada.
- § 181. Irrigation projects in Canada.
- § 182. Saskatchewan and Alberta Provinces—Particular features of.
- § 183. Saskatchewan and Alberta Provinces—The Canadian Pacific Railway Company and irrigation.
- § 184. The Canadian Pacific Railway Company—Statement by Mr. A. S. Dawson, chief engineer in charge of the project.
- § 185. Saskatchewan and Alberta Provinces—The Old Northwest Irrigation Act.
- § 186. Saskatchewan and Alberta—"Irrigation Act"—Principal features of the Act—Irrigation District Ordinance obsolete.
- § 187. Saskatchewan and Alberta—"Irrigation Act"—Titles—Interpretation.
- § 188. Saskatchewan and Alberta—"Irrigation Act"—Unit of measurement—Application of Act.
- § 189. Saskatchewan and Alberta—"Irrigation Act"—Water rights.
- § 190. Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition—Construction of works, how authorized.
- § 191. Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition—Construction of works.
- § 192. Saskatchewan and Alberta—"Irrigation Act"—Expropriation.
- § 193. Saskatchewan and Alberta—"Irrigation Act"—Licenses and licensees.
- § 194. Saskatchewan and Alberta—"Irrigation Act"—Complaints and inspection.
- § 195. Saskatchewan and Alberta—"Irrigation Act"—Amalgamation of companies.
- § 196. Saskatchewan and Alberta—"Irrigation Act"—Expropriation, cancellation, and forfeiture by the Government.
- § 197. Saskatchewan and Alberta—"Irrigation Act"—General provisions.
- § 198. Saskatchewan and Alberta—"Irrigation Act"—New Provinces.
- § 199. Saskatchewan and Alberta—"Irrigation Act"—Powers of Minister.
- § 200. Saskatchewan and Alberta—"Irrigation Act"—Penalties.
- § 201. Saskatchewan and Alberta—Regulations for the sale of lands required in connection with any system of irrigation.
- § 202. British Columbia—Water Act—Short title.
- § 203. British Columbia—Water Act—Interpretation.
- § 204. British Columbia—Water Act—Confirming to the Crown the ownership of all waters.
- § 205. British Columbia—Water Act—The unit of measurement—Water districts and water commissioners.

- § 206. British Columbia—Water Act—The creation of the “Board of Investigation” for the purpose of determining existing rights.
- § 207. British Columbia—Water Act—Powers of Board of Investigation—The determination of existing water rights.
- § 208. British Columbia—Water Act—Priority of purpose and of right in acquisition of water.
- § 209. British Columbia—Water Act—Procedure to obtain water licenses and the general rights acquired by licensees.
- § 210. British Columbia—Water Act—Approval of the undertaking of municipalities and companies.
- § 211. British Columbia—Water Act—General powers and privileges of municipalities and companies using water for domestic purposes.
- § 212. British Columbia—Water Act—Special powers and privileges of municipalities using water for domestic purposes.
- § 213. British Columbia—Water Act—Powers and privileges of power companies.
- § 214. British Columbia—Water Act—Municipalities as power companies.
- § 215. British Columbia—Water Act—Clearing streams for driving logs.
- § 216. British Columbia—Water Act—Storing water.
- § 217. British Columbia—Water Act—The taking and using of lands.
- § 218. British Columbia—Water Act—The obligations, duties, and limitations imposed upon licensees.
- § 219. British Columbia—Water Act—Respecting highways and other ways.
- § 220. British Columbia—Water Act—Power companies.
- § 221. British Columbia—Water Act—Limitations of power to purchase.
- § 222. British Columbia—Water Act—Respecting free miners.
- § 223. British Columbia—Water Act—Inspection of works.
- § 224. British Columbia—Water Act—Settlement of disputes.
- § 225. British Columbia—Water Act—Miscellaneous rights—In general.
- § 226. British Columbia—Water Act—Abandonment of rights.
- § 227. British Columbia—Water Act—Indian rights.
- § 228. British Columbia—Water Act—Naming streams—Securities.
- § 229. British Columbia—Water Act—Rents and royalties.
- § 230. British Columbia—Water Act—Reservations—Correction of errors in licenses.
- 231. British Columbia—Water Act—Respecting appeals—The certificate of the Lieutenant Governor.
- § 232. British Columbia—Water Act—Rules and regulations.
- § 233. British Columbia—Water Act—Penalties.
- § 234. British Columbia—Water Act—Saving clauses.
- § 235. British Columbia—Water Act—Our criticism of the Act.
- § 236. Saskatchewan and Alberta—Review and our criticism of the “Irrigation Act.”
- § 237. Saskatchewan and Alberta—Irrigation Act—Comparative study—Riparian rights.

§ 177. Scope of chapter.—In previous chapters of this work we have discussed the subjects of ancient and modern irrigation in the Old World.¹ We have also discussed modern irrigation in countries governed and controlled by the English in Egypt,² in India,³ in Australia,⁴ and in South Africa.⁵ We will now, in the present chapter, discuss the subject of irrigation and irrigation laws in Canada and in the respective Provinces of that country, which are all English Provinces. And, in our discussion, we will make a comparison between the laws governing water rights and the use of waters in the Dominion of Canada, as compared to those subjects in the western portion of this country.

§ 178. The English Colonists as irrigators.—In the previous chapters of Part II, we have confined our discussions to countries governed and controlled by the English in different parts of the world, outside of America.¹ In this chapter we will discuss what is being done on this side of the water in the Dominion of Canada, which is also an English country, or province; although, in form of government it is practically independent, having the power to enact its own laws governing its internal affairs. From the five countries discussed, those of Egypt,² India,³ Australia,⁴ South Africa,⁵ and now Canada,⁶ it will be readily seen that the English people, outside of their own little island, are the greatest irrigators in the world. It seems to be a general tendency of the English people, the moment that a colony swarms out from the mother country into a new, and many times wild country, to begin the development of its natural resources at the earliest possible moment, and to the greatest possible extent. And, as agriculture is the main resource of life, and in many of these countries it can not be developed to its fullest possibilities,

¹ For History of Irrigation, see Chap. 3, Secs. 63-87.

² For Modern Irrigation in Egypt, see Chap. 4, Secs. 88-102.

³ For Modern Irrigation in India, see Chap. 5, Secs. 103-118.

⁴ For Modern Irrigation in Australia, see Chap. 6, Secs. 119-130.

⁵ For Modern Irrigation in South Africa, see Chap. 7, Secs. 131-143.

¹ See Chaps. 4-7.

² See Chap. 4, Secs. 88-102.

³ See Chap. 5, Secs. 103-118.

⁴ See Chap. 6, Secs. 110-130.

⁵ See Chap. 7, Secs. 131-143.

⁶ See the following Secs., Nos. 179-184.

if at all, without irrigation, it therefore follows that irrigation is developed in its aid. Neither is this done without system, or in a haphazard, careless manner; but their operations, both upon the practical side of the question and in the enactment and enforcement of laws and regulations, are based upon the experience as gleaned from all parts of the world. At the same time, while developing the resources of a country, it is also the tendency of the English people to conserve those natural resources to the greatest possible extent consistent with that development. The theory is, that the Empire of England was not built for a day; and, therefore, no one generation should rob the earth of its fruits, but that these countries should be handed down to posterity in such a condition that it might also enjoy some of these fruits. The wise laws and forest policies, the laws tending to conserve the flow of streams, the laws regulating the use of mineral lands, the laws for the protection of the soil, and the drainage laws of the English Colonies, are among the best that can be found on earth. And, with these just laws and policies is it any wonder that the British Empire has spread out until it governs in all parts of the world?

§ 179. Particular features of the country.—The Dominion of Canada extends from 45° north latitude northward, and reaches from the Atlantic to the Pacific Ocean. In area it is nearly equal to the whole of Europe, and comprises about 3,500,000 square miles. Canada is featured by great rivers, great lakes, plains, and forested areas. It is also traversed by great mountain ranges, the principal ones being a continuation of the Rocky Mountain ranges extending from the United States northward. The natural resources of the Dominion are enormous, and can not be exceeded by any country on the globe.

The variations of the Canadian climate are less than in many countries of much smaller extent. But throughout nearly its whole area, the country is characterized by a greater heat in summer and a much lower temperature in winter than in corresponding European latitudes. The winters are usually cold, with considerable precipitation in the way of snowfall, and the temperature varies greatly, according to the location, latitude, altitude, prevailing winds, and other conditions, which we shall not attempt to discuss here. In many portions of Canada, fruits of

all kinds, except tropical, can be grown with success. In all portions, except in the extreme north, grains and forage may be grown.

As far as the precipitation of the country is concerned, as is the case with the United States, the country merges from a humid climate in the eastern portion to one that, as far as all practical purposes are concerned, is arid, although the aridity does not reach the extent that it does in some portions of the United States, notably in Arizona, New Mexico, and in the Great Basin. In many of the driest portions crops may be grown without irrigation; but from experience, it has been ascertained that with irrigation either as supplemental to the rainfall, or regardless of the rainfall, better results may be obtained. The great fertile plains of the country, and its enormous water resources, make the cultivation of crops by irrigation practicable and always insure good results.

§ 180. The Government of Canada.—The Dominion of Canada is governed in many respects similar to this country. It has its general Parliament, which corresponds to our Congress. The various Provinces also have their parliaments or legislatures, which correspond to the legislatures of the States of this country. Each State may enact such laws as it sees fit, regulating and controlling the waters within its boundaries, and the uses of the same; provided, that such laws do not conflict with the laws enacted by the Dominion Parliament upon the same subject. In the Provinces of Alberta and Saskatchewan, the general laws governing and controlling the waters therein, are enacted by the Dominion Parliament, and all irrigation rights and matters are dealt with solely by the Dominion Government, and these laws are administered through the Commissioner of Irrigation, a Dominion officer. Therefore, it must be understood that the old "Northwest Irrigation Act,"¹ now the "Irrigation Act," was made solely by the Dominion Government, and the Provinces of Alberta and Saskatchewan had no voice in such enactment.²

In the Province of British Columbia, greater powers are conferred upon its legislature, and the "Water Act" of 1909, here-

¹ See Sec. 185.

² For the Irrigation Act, see Secs. 186-201.

inafter discussed,³ was enacted by the legislature of British Columbia.

The principal laws upon the subject of waters in the Dominion of Canada will be discussed in the subsequent sections of this chapter. As a general thing the water and irrigation laws of Canada are wise, sane, and consistent. The strong features of these laws are, as is the case in all English Colonies or Provinces, the most absolute State control of the flow of streams, the distribution and even use of the water, and the abrogation, or at least the restriction of the old common law of riparian rights of the mother country. Very little is left to the individual in this respect. Still, all rights of the individual are protected by governmental interference, and all the farmers of that country seem prosperous and contented. This is one of the surest indications of a good Government and wise laws.

§ 181. Irrigation projects in Canada.—In Canada we find that there are four Provinces where great preparations have been and are now being made in irrigation matters, and these are the Provinces of Alberta, Saskatchewan, Manitoba, and British Columbia. No one of these Provinces can be called arid in the sense that aridity is known in Arizona and New Mexico, but large portions of all come within what is known as the semi-arid region. For this very reason very little interest was taken in the subject of irrigation during the first settlement of these portions, and irrigation enterprises were slow in starting. There were cycles of years when crops could be matured, and then would come a period of dry seasons, when there was almost utter failure of crops.

As was said by Mr. J. S. Tempest, C. E.:¹ “Although irrigation is usually practiced only in arid and semi-arid countries, and in the latter often only when the seasons are too dry to produce merely fair crops, it is a fact that much benefit and economic gain would result from the practice, even where there is a fairly good average rainfall. Rain does not always, or even often, fall at the time it is needed, while an efficient irrigation scheme is ready to turn on the water at a moment’s notice. It has been

³ See Secs. 202-235.

¹ In Bulletin No. 1, Irrigation Se-

ries 1910, Department of Interior of Canada, p. 13.

truly said that irrigation is not a mere substitute for rain, but an improvement on it."

The most of the settlers coming into the country knew nothing about irrigation, and during these dry seasons many of them abandoned their lands and moved to other sections, where there was a greater rainfall. However, about the year 1890, some settlers, who had come from the arid regions of the United States where irrigation was common, commenced experimenting by constructing small ditches for the irrigation of the lands in the valleys of the smaller streams, and the results obtained by them caused the first interest in the subject of irrigation, and indicated that by that means bountiful crops could be produced. From that small beginning irrigation in Canada has grown, until it has passed beyond the experimental stage. The enormous possibilities of the country along these lines have awakened great interest in the subject, and many great projects have been and are now being constructed. Opportunities are given under the laws for the operation of private enterprises, and much private capital is invested in these works, many of which are upon a paying basis. Railroad companies have taken advantage of their opportunities and have also constructed works for the irrigation of the lands through which their lines run.

§ 182. Saskatchewan and Alberta Provinces—Particular features of.—The portion of Canada included in the Provinces of Saskatchewan and Alberta, and which were formerly a portion of the Northwest Territories, lying within what is known as the semi-arid region, commences at the intersection of the 103d meridian with the International boundary, and extends northward about 350 miles. The other portion of these Provinces is within the humid region. This semi-arid region includes some 99,108 square miles, or 64,621,169 acres.

This district is intersected by several main drainage channels, including the South Saskatchewan, Bow, Belly, St. Mary, Oldman, Highwood, and Red Deer Rivers, and numerous smaller streams. The soil of this region is, as a whole, of a most fertile character. Grass of a more or less luxuriant growth is produced all through this vast area, and it may be said that within it can be found the largest unoccupied area producing grass and suitable for grazing cattle, sheep, or horses at large in Northern America. In its

general characteristics of soil and climate, and in so far as temperature is concerned, the semi-arid region is well adapted for settlement, but is lacking in the important feature of sufficient rainfall to assure the growth of crops each year, without irrigation. It is now known that during certain years there is sufficient rainfall to mature crops, and that in such seasons bountiful crops in certain districts have been harvested, but it is generally recognized that during the majority of years there is not the requisite amount of moisture to make agriculture successful, and that to insure a crop, water must be applied through irrigation.

In the matter of temperature, the area comprised in the semi-arid portion of the Provinces is more favored than other parts. Speaking generally, the summers are hot and the winters cold, and during the winter season all parts of the region are subject, to a greater or less degree, to chinook winds, which blow from the west, and which, for a period of ten weeks' duration, raise the temperature to almost summer-like conditions.

Fortunately, the semi-arid portion of the Provinces has, as a whole, been favored with a fair supply of water available for irrigation, but as is usually the case, it is far short of the amount that would be necessary to irrigate all of the land. The total amount of the water available for irrigation will only irrigate a small percentage of the total area of the 64,000,000 acres of land. Speaking in general terms, it may be stated that under the most favorable circumstances of storage of the high water and flood discharges of the streams, and also taking into consideration all the smaller water supplies, as well as of the larger rivers, and with the most intelligent use of the water, it can not be hoped to irrigate more than 15 per cent of the area included in this vast region.¹ This statement will serve to illustrate the fact that for all time some 85 per cent of this area must be devoted to grazing, and indicates that the greatest development in the region will result from as wide a distribution as possible of the irrigated areas throughout the whole region.²

§ 183. Saskatchewan and Alberta Provinces—The Canadian Pacific Railway Company and irrigation.—Among the greatest

¹ Report of Irrigation in the North-west Territories, 1902, p. 35.

² See, also, for the particular features of the country, Sec. 179.

projects of the country are those owned and operated by the Canadian Pacific Railway Company. The directors of this company have always had their eyes on the more or less distant future. They have been wise enough to see that the interests of the company and those of the Dominion were in many respects identical, and that when the company expended money in the construction of irrigation works and in inducing settlers to take up land in Canada, they were not only aiding in the development of the country, but they were also insuring increased traffic for their road. For many years the investments of this company were without results, but now the returns are coming in. These returns are infinitely more satisfactory to all concerned than they would have been had the company endeavored to despoil the shippers and the country, as is the case with a number of railroad companies this side of the Canadian line. In 1911, this company owned and controlled 16,137 miles of road, as against 4,315 miles in 1886. The average annual mileage addition has been 380 miles; and during the last two years it has even been greater. In 1910 the addition was 460 miles, and in 1911, 753 miles. These facts are mentioned to show that the policy of this company is constructive, and not destructive, and that it is the greatest agent in the country tending to build up and develop its great resources. That the policy of the company was a wise one is proved by the great numbers of settlers which have come and taken up homes along its lines.

During the later years much attention has been paid by the company to its lands. On June 30, 1911, the company owned 7,061,184 acres in Manitoba, Saskatchewan, and Alberta, and 4,427,811 in British Columbia. The interesting feature of these lands is their steady rise in value. In 1905, one-half million acres, unimproved, were sold at an average of \$4.80 per acre; in 1909, 306,083 acres were sold at an average of \$10.96 per acre; in 1910, 829,609 acres of unimproved lands sold at \$12.78 per acre, and 145,421 acres of irrigated land sold at \$26.59 per acre; and in 1911, 631,777 acres of unimproved land sold at the average of \$14.11, and 19,097 acres of irrigated lands were sold at the average of \$33.63 per acre. And, deducting the expenses per acre for irrigation, it was seen that it was to the decided advantage of the

company to sell the lands with the water rights, rather than to sell them unimproved in this respect.

It is only within the recent years that the Canadian Pacific Railway Company has taken up the question of irrigation and the sale of irrigated lands, and even now the far-seeing statesmanship of its managers and directors is nowhere more clearly exemplified than in its great irrigation projects, and by the stimulation of immigration to the Dominion through these efforts. Up to the end of June, 1905, the total expenditures by the company on irrigation works was the sum of \$796,695. In 1906, the sum of \$748,270 was expended for the same purpose, or nearly as much as had been theretofore expended altogether. In the two years, 1907 and 1908, a further sum of \$585,351 was devoted to this improvement work. In 1909, the further expenditure of \$719,514 brought the total up to \$2,849,830. This sum constructed works sufficient to irrigate an area of about 350,000 acres, being a portion of the western block of lands in the Province of Alberta. These lands, previous to this time had been unsalable on account of their arid condition, and by the expenditure of less than \$3,000,000 the company was able to sell a little more than one-third of the block for more than \$9,000,000. At the stockholders' meeting for the year 1910, the executive asked for and secured an appropriation of \$8,500,000 for providing water for the 1,100,000 acres of land comprising the eastern block in the Province of Alberta. It was estimated that it would take three years to complete the work as then planned. Up to the end of June, 1911, something over \$2,000,000 had been expended upon this second project. And, according to the last report, in all, from the beginning, the company has expended \$5,018,953 in these irrigation projects. All works are constructed upon the most modern, scientific, permanent lines. The progress of the settlement under these lands has been rapid, many of the settlers coming from the United States. The company will erect a house and barn, and break and sow the land for the first year, and the settler finds thus a ready made farm, which he can purchase and enter into possession of for from \$1,000 to \$3,000. The cost of this work and improvements is added to the sale price of the farm. Upon the purchase of a farm the settler pays down one-tenth of the pur-

chase price and the balance is made payable in nine equal annual installments, with interest at 6 per cent per annum. The company also employs competent men to explain the most approved methods of irrigation, and to assist the settlers in the construction of their ditches.

This project is something new in irrigation matters, it being both projected and constructed by a railway company. While the railway companies in the United States have done much to promote irrigation in order to settle the country adjacent to their various roads, yet it is not within the knowledge of the writer that any of these roads has ever undertaken, with its own funds and as a part of its corporate activities, to construct and maintain an irrigation system. The Canadian Pacific Railway is unique in this matter, as it has not only constructed this irrigation system at the expense of millions of dollars, but it guarantees the water to the settler according to the "duty of water" as prescribed by the Canadian irrigation laws, and also guarantees to forever maintain the system of canals and to deliver the water to each quarter section of land brought under ditch. Partly because the cost per acre of getting the water upon the land is comparatively small, although the aggregate cost is large, and partly because the railway company is more desirous of building up a great agricultural community thereby increasing the traffic of the road, than of making an immense profit by the sale of the lands, they have been placed upon the market, with a perpetual water right, at a very moderate price.

The vastness of the undertaking, together with the fact that the great corporation, the Canadian Pacific Railway Company, is forever to maintain the system, has attracted not only the settlers to that section of the country, but it has also attracted the attention of experts in irrigation affairs the world over. The method of operation and the general policy of this railway company is something upon the order of the policy of the Government of Australia, discussed in a previous chapter.¹ Only, we believe that the railway company adopted the policy first.

In the following section, we will give a further statement of

¹ For Modern Irrigation in Australia, see Chap. 6, Secs. 119-130.

the facts of this great railway enterprise as related by Mr. A. S. Dawson, the chief engineer in charge.²

§ 184. **The Canadian Pacific Railway Company—Statement by Mr. A. S. Dawson, chief engineer in charge of the project.**—Mr. A. S. Dawson, Chief Engineer, in charge of the Canadian Pacific Railway Company's Irrigation Projects in the Provinces of Alberta and Saskatchewan, says:¹ "Supplying moisture to desert and semi-arid lands by artificial means is no new thing in the enterprises of civilization, and has been practiced on one portion or another of the globe since the dawn of history.

"It was practiced by the Egyptians, Arabians, and Assyrians many centuries past; and history records that the flood waters of the Nile were used to irrigate its valleys many hundreds of years ago. The Romans operated vast systems, which are in use at the present time; and the Chinese are credited with having put water on their rice lands by artificial means several centuries before the Christian era.

"This ancient art had its origin in America in prehistoric times with the Pueblo Indians, who inhabited what are now portions of New Mexico and Arizona.

"Mormons settling on the shores of Great Salt Lake were the first English-speaking people to make a systematic application of the principles of irrigation in Western America; and this was shortly followed by the use of ditches in California, originally constructed for placer mining. The results obtained therefrom soon induced settlers in the States of Idaho, Washington, Oregon, and Wyoming to resort to similar means in the cultivation of their crops. This was followed by large private enterprises, and by the passing in 1902 of the Reclamation Act by the Government of the United States. This vast enterprise, under the direction of the Secretary of the Interior, has now either in operation or under construction projects involving an expenditure of over \$60,000,000; and has undertaken to complete 35 projects, to serve 3,200,000 acres of land, at an estimated cost of \$145,000,000.

² See Sec. 184.

¹ In a lecture delivered before the Fifth Annual Convention of the West-

ern Canada Irrigation Association, held in Calgary, Alberta, August, 1911.

"The extent to which irrigation is practiced today is oft-times overlooked; amounting as it does to 53,000,000 acres in the Indian Empire, 8,000,000 acres in Egypt, 5,000,000 in Italy, 3,000,000 in Spain, 15,000,000 in the United States, with smaller areas in China, Japan, Australia, France, South America, and elsewhere.

"The works providing for the irrigation of these vast areas represent an investment of over \$1,000,000,000, and produce annually crops valued at over that amount.

"Irrigation in Southern Alberta may be said to date from 1892, when a series of dry years turned the attention of the settlers to the possibility of aiding the growth of their crops by the artificial application of water. The question subsequently assumed such importance as to warrant its being taken up by the Government, with the result that well-considered and comprehensive laws relating to the use of water for irrigation were passed, a system of general surveys undertaken to determine the source and value of available supplies, and the location of the areas where such water could be used to best advantage.

"These surveys showed that three extensive areas offered special advantages for irrigation—one containing some 250,000 acres, situated in the Lethbridge district, which could be supplied from the St. Mary's River; a second containing about 350,000 acres, lying near the junction of the Bow and Belly Rivers; and a third, a much larger one, situated along the main line of the Canadian Pacific Railway, and extending about 150 miles east of the city of Calgary. It is interesting to note that the works to serve all of these tracts have either been built, or are now under construction.

"It is the last mentioned project that this paper deals with specifically.

"This tract of land eventually passed into the hands of the Canadian Pacific Railway Company, and is now known as the Bow Valley Irrigation Block. It was conceded that its development and colonization along proper lines would add materially to the selling prices of the land; would do away with the uncertainty of getting sufficient moisture for certain crops in certain years; would admit of intensive farming on smaller areas, and would result in settlers being attracted in greater numbers than

could otherwise be expected; all of which are the basis of the revenue-producing value of any agricultural country, as far as traffic receipts are concerned.

“The Bow River heads, as you are aware, in the Bow Lakes on the eastern slope of the Rocky Mountains, and with its tributaries, has a drainage area of about 3,800 square miles at Calgary, and about 5,100 square miles at Bassano. It generally reaches its highest stages between June 15th and August 15th of each year, and its lowest stages during January and February. Its maximum flood discharge at Calgary has probably been close to 100,000 second feet, although the hydrographic records for both extreme high and low water are rather meager.

“The ‘block’ is an open prairie plateau, with a general elevation of about 3,350 feet above sea level at its westerly limits, sloping gradually until a general elevation of about 2,300 feet is reached at its easterly boundary. Its topography is rolling, particularly in the western portion, whereas large areas of almost level plains are found in its easterly limits. The soil is good, consisting of a heavy, black loam and clay subsoil in the westerly portions, and a lighter sandy loam of great depth overlying clay and hardpan in its easterly limits.

“It is bounded on the west by the Fifth Meridian; on the south by the Bow River; on the east by the line between ranges 10 and 11, west of the Fourth Meridian; and on the north by the Red Deer River and the north boundary of township 28. Its length east and west is about 140 miles, and it has an average width north and south of about 40 miles. It is intersected by the main line of the railway company, and numerous other railway facilities are being provided in various directions. It contains an area of 4,840 square miles, or 3,097,580 acres.

“The precipitation varies considerably from year to year, and decreases easterly as the altitude becomes lower. Meteorological records only exist subsequent to 1886, and are only applicable to the westerly portion of the block. The average annual precipitation at Calgary, between 1886 and 1910, was 15.15 inches; the minimum for the same period being 5.90 inches in 1889, and the maximum for that period 31.90 inches in 1902. The average for the irrigation period of five months, from May 1st to October 1st, covering the same years, was about 11 inches.

"This moisture, however, is not always available when most needed, and it is a recognized fact that without irrigation certain crops can not be raised to advantage; and that in any year the certainty of crop production with large yield can only be assured by artificial means.

"Surveys in connection with the project were commenced by the railway company in 1903, and have been gradually extended in detail since that date. As you may understand, this represented a vast amount of work, as an irrigation project demands surveys and examinations far more complete than those for a railway line. Elevation is the controlling feature, and lateral extent or width of country is as important as length; and width, length, and height have all to be considered.

"Accurate topographical surveys have been carried on by plane-table methods over practically the whole block at an average cost of about 10 cents per acre, on which the complete system has been projected.

"On the completion of the preliminary surveys it became evident that the block naturally divided itself into three sections, which were designated as the western, eastern, and central, of about 1,000,000 acres each; and the work is being carried on along the lines of development in the order named. The western and eastern sections are complete units in themselves, whereas the central section, owing to its general elevation, could only be served by an enlargement of a portion of the trunk lines in the western section." And then follows a specific description of the three sections referred to.

Speaking of the western section of the work, he says: "This portion of the system is being designed with a view of rotation in supply being adopted, which will result in each individual farmer obtaining a satisfactory head, a fair division of water, and simplification of operating problems. This is a matter which can not be worked out in detail until the lands are settled, but the system is being designed on the basis of giving parcels of between 80 and 100 acres a supply of two second feet for a period of 96 hours, and parcels smaller than 80 acres a similar flow for 48 hours.

"It is the intention that daily records of the receipt and delivery of water and of the outflow through all branches of the

system shall be maintained from the beginning; such data as necessary in irrigation management as bookkeeping in any commercial institution. The information thus obtained is essential in enforcing proper water economy; in preventing land from being injured; and in keeping farmers from getting into bad habits in using water, which once acquired, result in reduced crop production, increased cost of operation, and needless annoyance to the management.

“World-wide experience in the use of water on cultivated lands under any kind of crops during long periods of years, shows that duty varies with, (1) the nature of the soil; (2) the age of the soil; (3) the kind of crop; (4) the weather conditions; (5) the slope and condition of the conveying channels of supply; (6) the distance the water is carried in the ditches and channels to the fields; and (7) the experience and skill employed in irrigation. As you are aware, the legal duty in the Province of Alberta is fixed by the Irrigation Act as a continuous flow of one cubic foot per second per 150 acres for 153 days, between May 1st and September 30th. Measurement of this supply is arranged for by weirs approved by the Commissioner of Irrigation.

“The company has adopted the plan of constructing the complete distribution system so as to deliver water at the boundary of each farm unit of 160 acres or less; as it was considered impracticable to leave to the settlers the building of the smaller ditches, which would have resulted in delays to the work, excessive cost, and a retarding of the development of the area, followed by increased difficulties in operation. In constructing the distribution system, 160 acres have been considered the farm unit, although in the western section several colonies have been established on the so-called ‘ready-made’ farms of 80 acres. In the eastern section of the block about 5 per cent of the farm units will be sold as 80-acre farms, in addition to the establishment of a number of colonies on farms averaging from 80 to 120 acres.

“The successful outcome of any large irrigation project is only partially solved by good construction, and in some cases the administrative heads of large schemes have failed to realize that the ultimate success of such enterprises can not be fully

brought about without farmers; and that it is their labors which determine the real value of such properties. With this realization, the sale of the lands in this block warranted the establishment of a very large organization, which has extended over all important points in Canada, the United States, Great Britain, and parts of Continental Europe, and which has resulted during the past five years in the disposal of over 1,300,000 acres.

"Everything that follows in the wake of increased population is an argument in favor of irrigation and the cultivation of small areas, which can only be carried out by this means of farming. Moreover, this results in a better type of farmer, greatly improved living conditions, and correspondingly elevated social conditions.

"No practical agriculturist can fail to realize the fact that the scope for irrigation in semi-arid conditions in northern latitudes is very great, and that this system of farming will ultimately become a leading factor, and occupy a vitally important place in the agricultural development of Southern Alberta."

§ 185. Saskatchewan and Alberta Provinces—The old Northwest Irrigation Act.—In 1905 the old Northwest Territories were abolished and the Provinces of Alberta and Saskatchewan created thereout by the Dominion Parliament statute,¹ and by the Act it was provided that all laws and all orders and regulations made thereunder, so far as they are not inconsistent with the Acts creating the Provinces, shall continue in said Provinces until repealed, or amended.

In these Provinces the necessity for legislation regarding the important subject of the use of water for irrigation became apparent only during the past few years, and may, in fact, be said to date from the time, within the past twenty years, when the earlier settlers in the southern and southwestern portions of the old Northwest Territories had, by painful experience, proved that farming without the aid of irrigation was a precarious undertaking. Fortunately, however, the necessary legislation followed almost immediately upon the footsteps of crop failures, and there was practically a clear field, as far as vested rights are concerned, for the introduction of laws upon the subject of water

¹ Chaps. 3 and 42 assented to July 20, 1905.

rights. This fact has had much to do with the success and the absence of litigation so far attending the administration of the Canadian irrigation law. As is stated in the introduction in Bulletin No. 1, Irrigation Series of the Department of the Interior of Canada, p. 5, "Irrigation has been practiced to some slight extent in the southern portions of what are now the Provinces of Alberta and Saskatchewan ever since these districts were first settled, but the irrigated tracts were of small extent and the works were crude, usually consisting merely of a makeshift dam and headgate and a ditch, for the irrigation of a few acres of garden or hay land in connection with cattle raising, which was practically the only occupation of the earlier settlers.

"There was at this time no law regulating the use of water for irrigation, and he who wished took from the nearest stream what he required, or thought he required, without permission and without making any record of the quantity taken. As settlement advanced, the attention of the Government was drawn to the confusion that was certain to result as this practice became more general, and steps were taken to frame an irrigation code adapted to the needs of the country."

The laws of the old Northwest Territories of Canada relating to the use of water were contained in two enactments, namely, the "Northwest Irrigation Act," assented to on June 13, 1898, and the "Irrigation District Ordinance," also assented to in 1898. The first mentioned law was an Act passed by the Dominion Parliament in 1894, and subsequently amended and consolidated, while the "Irrigation District Ordinance" was an enactment of the Territorial Legislature, authorizing the formation of the irrigation districts, which, after acquiring water rights under the Irrigation Act, the parent law, are empowered to construct works for the utilization of such water as municipal or district organizations. The history of the enactment of the "Northwest Irrigation Act" is given in the preliminary statement in Bulletin No. 1, Irrigation Series 1910, Department of the Interior of Canada, wherein it is said: "Officers of the Topographical Survey Branch of the Department of the Interior were assigned to the work, and, as a result of their investigations, a bill was introduced at the session of Parliament in 1893, but was not pressed to a vote at that session. In the following year,

opportunity having in the meantime been given for further investigation, the bill was re-introduced and passed under the title of 'The Northwest Irrigation Act.' This law has since been amended from time to time in such manner as experience has shown to be necessary, but, in its essential features, it stands today substantially as when first enacted."

After the formation of the Provinces of Alberta and Saskatchewan out of the old Northwest Territory, the "Northwest Irrigation Act" was amended, revised, and re-enacted, and is now known as the "Irrigation Act," and will be thoroughly discussed in following sections of this chapter.

§ 186. Saskatchewan and Alberta—"Irrigation Act"—Principal features of the Act—Irrigation District Ordinance obsolete.—The principal features of the Irrigation Act as the same is in force today, is set forth in a synopsis in Bulletin No. 1, Irrigation Series, 1910, Department of the Interior of Canada, as follows: "The present law is believed to embody such of the best principles of the irrigation laws of other countries as are applicable to local conditions in Western Canada, and to be free from most of the defects of those laws. The Irrigation Act applies 'to the Provinces of Saskatchewan and Alberta and to the Northwest Territories, except the provisional districts of Mackenzie, Franklin, and Ungava.' Its essential features are:

"I. That the water in all streams, lakes, springs, ponds, or other surface sources of water supply is the property of the Dominion Government.

"II. That the right to use this water may be obtained by companies or individuals upon compliance with the provisions of the law.

"III. That the uses for which water rights may be so acquired are: (a) Domestic, which includes household and sanitary purposes, and all purposes connected with the watering of stock and the operation of agricultural machinery by steam; (b) industrial, *i. e.*, the operation of railways and factories by steam; (c) irrigation, and (d) other purposes than those above-mentioned.

"IV. That the individual or company acquiring such a water right shall be given a clear and indisputable title to the right to

the use of the water so long as he shall continue to apply it to beneficial use.

“V. That such rights may be forfeited by abandonment, waste, or non-use.

“VI. That holders of water rights shall have the protection and assistance of permanent Government officials in the exercise thereof and that all disputes and complaints in connection therewith shall be referred to and settled by such officials, whose decisions shall be final.”

In addition to the old Northwest Irrigation Act,¹ covering the territory which now includes the Provinces of Saskatchewan and Alberta, there was another law in force concerning waters, known as “The Irrigation District Ordinance,”² to be found in Chapter 74 of the Consolidated Ordinances of 1898. Upon the division of the territory composing Saskatchewan and Alberta, this ordinance was continued in full force and effect in each Province. The ordinance was modeled somewhat upon the California Irrigation District laws, with changes necessary, adapting it to local conditions.

But in spite of the success of irrigation districts in this country, they do not seem to have been successful in the Canadian Provinces, or to have been accepted by the people to any great extent. Therefore, as far as the Province of Saskatchewan is concerned, the ordinance was repealed on June 12, 1908.³

Relative to the Province of Alberta, advices from Mr. W. F. Clarry, Deputy Attorney General of the Province of Alberta, and P. M. Sander, Acting Commissioner of Irrigation, to the author, under date of March 28, 1912, is as follows: “This ordinance is still nominally in force, but there are, at the present time, no irrigation districts operating under its provisions.” The only explanation for the failure of the Irrigation District Ordinance is, that the people of these Provinces are better satisfied with the provisions of the Irrigation Act, which is upon the theory of strict governmental control, as to the distribution and use of the waters within these Provinces.

¹ See Sec. 185.

² Enacted in 1898, No. 30.

³ Statutes of Province of Saskatchewan for 1908, Chap. 38, Sec. 8, which

reads as follows: “The Irrigation District Ordinance as amended, Chap. 28 of the Ordinance of 1901, is hereby repealed.”

§ 187. Saskatchewan and Alberta—“Irrigation Act”—Titles—Interpretation.—The existing irrigation and water law originally enacted in 1906,¹ by the Dominion Parliament for the Provinces of Saskatchewan and Alberta, and as amended to date, is entitled: “An Act respecting irrigation, as amended by Chap. 38, 7-8 Edward VII, and Chap. 34, 9-10 Edward VII,”² and is as follows:

Short title.—1. This Act may be cited as the Irrigation Act.³

Interpretation.—2. In this Act, unless the context otherwise requires: (a) “Minister” means the Minister of the Interior; (b) “Department” means the Department of the Interior at Ottawa; (c) “Commissioner” means the officer appointed by the Governor in Council for the execution within any Province of the duties by this Act imposed upon the commissioner; (d) “Chief Engineer” means the officer appointed by the Governor in Council for the execution within any Province of the duties by this Act imposed upon the chief engineer; (e) “Dominion land surveyor” means a surveyor duly authorized, under the provisions of the Dominion Lands Act, to survey Dominion lands; (f) “company” means any incorporated company, the object and powers of which extend to or include the construction or operation of irrigation or other works under this Act, or the carrying on thereunder of the business of the supply or sale of water for irrigation or other purposes, and includes any person who has been authorized or has applied for authority to construct or operate such works or carry on such business, or who has obtained a license under this Act, and also includes any irrigation district incorporated under an ordinance of the Northwest Territories, whether passed before or after the first day of September, one thousand nine hundred and five, or under an Act of the legislature of the Province of Saskatchewan or of the Province of Alberta; (g) “works” means and includes any dikes, dams, weirs, floodgates, breakwaters, drains, ditches, basins, reservoirs, canals, tunnels, bridges, culverts, cribs, embankments, headworks, flumes, aqueducts, pipes, pumps, and any contrivance for carrying or conducting water or other works which

¹ Chap. 61, R. S. C. 1906; 61 V., c. 35. above mentioned Acts is a department consolidation for office purposes.

² This consolidation of the three ³ 61 V., c. 35, s. 1.

are authorized to be constructed under the provisions of this Act; (h) "duty of water" means the area of land that a unit of water will irrigate, which unit is the discharge of one cubic foot of water per second; (i) "applicant" means a company which has applied or is about to apply for a license; (j) "licensee" means any company which has been granted a license under this Act; (k) "domestic purposes" means household and sanitary purposes, and all purposes connected with the watering of stock and the working of agricultural machinery by steam, but shall not include the sale or barter of water for such purposes;⁴ (l) "industrial purposes" means the working of railways or factories by steam, but shall not include the sale or barter of water for such purposes; (m) "Board" means the Board of Railway Commissioners for Canada.⁵

§ 188. **Saskatchewan and Alberta—"Irrigation Act"—Unit of measurement—Application of Act.**—For the unit of measurement of water and the application of the Act, it is provided, as follows:

Unit of Measurement.—3. The discharge of one cubic foot of water per second shall be the unit of measurement of flowing water.

(2) The cubic foot or acre foot, shall be the unit of measurement and quantity, and the acre foot is equivalent to 43,560 cubic feet.¹

Application of Act.—4. This Act shall apply to the Provinces of Saskatchewan and Alberta and to the Northwest Territories, except the provisional districts of Mackenzie, Franklin, and Ungava.²

§ 189. **Saskatchewan and Alberta—"Irrigation Act"—Water rights.**—5. *Irrigation companies subject to this Act.*—All companies formed to promote irrigation prior to the thirteenth day of June, one thousand eight hundred and ninety-eight, shall, except, as to their powers to issue bonds, debentures, or other securities, be subject to the provisions of this Act.¹

⁴ 61 V., c. 35, ss. 2 and 8; 4-5 E. VII, c. 26, s. 1, as amended by 7-8 E. VII, c. 38, s. 1.

⁵ 7-8 E. VII, c. 38, s. 1.

¹ 61 V., c. 35, s. 38.

² 61 V., c. 35, s. 3.

¹ 61 V., c. 35, s. 53.

6. *Property in and right to use water vested in Crown.*—The property in and the right to the use of all the water at any time in any river, stream, water course, lake, spring, creek, ravine, canyon, lagoon, swamp, or other body of water shall, for the purpose of this Act, be deemed to be vested in the Crown, unless and until and except only so far as some right therein, or to the use thereof, inconsistent with the right of the Crown, and which is not a public right or a right common to the public, is established.

(2) *Diversion or use prohibited except in exercise of right.*—No person shall divert or use any water from any river, stream, water course, lake, creek, spring, ravine, canyon, lagoon, swamp, marsh, or other body of water, otherwise than under the provisions of this Act except in the exercise of a legal right existing at the time of such diversion or use.²

7. *Grant of lands not to convey water rights.*—Except in pursuance of some agreement or undertaking existing on the thirteenth day of June, one thousand eight hundred and ninety-eight, no grant shall be made by the Crown of lands or of any estate therein, in such terms as to vest in the grantee any exclusive or other property or interest in or any exclusive right or privilege with respect to any lake, river, stream, or other body of water, or in or with respect to the water contained or flowing therein, or the land forming the bed or shore thereof.³

8. *Water rights to be acquired only under this Act.*—Unless acquired by a grant made in pursuance of some agreement or undertaking existing on the thirteenth day of June, one thousand eight hundred and ninety-eight, no right to the permanent diversion or to the exclusive use of the water in any river, stream, water course, lake, creek, spring, ravine, canyon, lagoon, swamp, marsh, or other body of water shall be acquired by any riparian owner or any other person by length of use or otherwise than as it may be acquired or conferred under the provisions of this Act.⁴

9. *Persons holding rights when Act first passed.*—Every person or company who immediately prior to the thirteenth day of June, one thousand eight hundred and ninety-eight—(a) held water rights of a class similar to those which may be acquired

² 61 V., c. 35, s. 4, as amended by
7-8 E. VII, c. 38, s. 2.

³ 61 V., c. 35, s. 5.

⁴ 61 V., c. 35, s. 6, as amended by
7-8 E. VII, c. 38, s. 3.

under this Act; or, (b) with or without authority, had constructed or was then operating works for the utilization of water, may, if he had, prior to the first day of June, one thousand eight hundred and ninety-eight, obtained a license under this Act, exercise such rights and carry on such works under the provisions of this Act.⁵

10. *Application for water rights.*—Any water, the property in which is vested in the Crown, may be acquired, for domestic irrigation, industrial, or other purposes, upon application therefor as hereinafter provided.

(2) *How made.*—All applications shall be made in accordance with the provisions of this Act.

(3) *Precedence.*—Such applications shall have precedence according to the respective dates of their filing with the commissioner.⁶

(4) *Irrigation license to include domestic use.*—A license of water for irrigation purposes, or any person who has acquired from a license water for such purposes, shall be entitled to use such water for domestic purposes.⁷

11. *Riparians not to be deprived of water for domestic purposes.*—No application for any purpose shall be granted where the proposed use of the water would deprive any person owning lands adjoining the river, stream, lake, or other source of supply of whatever water he requires for domestic or industrial purposes.⁸

§ 190. Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition—Construction of works, how authorized.—12. *License for preliminary work.*—An applicant contemplating or projecting any works under this Act, may, upon submitting a general description of such works and upon payment of a fee of three dollars, obtain from the chief engineer a license to do the necessary preliminary work in connection with the location of such works.

(2) *Licensee may enter lands, etc.*—The applicant, after he obtains such license, may, with such assistants as are necessary, enter into and upon any public or private lands to take levels, make surveys, and do other necessary work in connection with

⁵ 61 V., c. 35, s. 7.

⁷ 7-8 E. VII, c. 38, s. 4.

⁶ 61 V., c. 35, s. 8, as amended by
7-8 E. VII, c. 38, s. 4.

⁸ 61 V., c. 35, s. 9, as amended by
7-8 E. VII, c. 38, s. 5.

such location; Provided, that he shall do no unnecessary damage.¹

13. *Requirements of application.*—Every applicant under this Act shall file with the commissioner a memorial, in duplicate, on forms provided by the commissioner, in which the applicant shall set forth: (a) His name, residence, and occupation; (b) his financial standing; (c) the source from which water is to be diverted and the point of diversion; (d) the probable quantity of water to be used; (e) the size and character of the works to be constructed; (f) the area and location of the land to be irrigated; (g) the value of such land in its present state, including improvements; (h) the probable number of consumers; and, (i) the rate, if any, to be charged for water sold.²

14. *If applicant incorporated company.*—If the applicant is an incorporated company, the memorial shall, in addition to the other requirements of this Act, set forth: (a) The names of the directors and officers and their places of residence; (b) the date of incorporation; (c) the amount of the subscribed and the paid-up capital and the proposed method of raising further funds, if needed; and, (d) the purposes for which the company is incorporated.³

15. *Documents, etc., to be filed.*—Every such application shall also file with the commissioner:

(a) *Permission to cross road, etc.*—Permission in writing from

1 61 V., c. 35, s. 10.

A person who desires to acquire a right to use water for any of the purposes previously mentioned should apply to the Commissioner of Irrigation at Calgary, Alberta, giving a general description of his proposed undertakings. Upon payment of a fee of \$3 the commissioner is authorized to issue a license permitting the applicant to enter upon public or private lands for the purpose of making the necessary surveys, provided that no unnecessary damage shall be done.

2 61 V., c. 35, s. 11.

3 61 V., c. 35, s. 11.

In such cases it is required that the memorial shall, in addition to the

other requirements of the Act, set forth the names and places of residence of the directors and officers, the date and purpose of incorporation, the amount of the subscribed and the paid-up capital, and the proposed method of raising further funds, if needed. More elaborate plans are also required in the cases of these larger projects, and the law is so framed as to place the Government in a position to examine the application not only from an engineering standpoint, but as a business venture as well, and has a tendency to prevent the filing of purely speculative applications.

the provincial, municipal, or other authorities having jurisdiction in that behalf, to construct any canal, ditch, reservoir, or other works referred to in the memorial upon, along, across, or under any road allowance, or any public highway, square, or other public place which may be affected by such works, or from the board as hereinafter provided, if such permission can be obtained in advance of authorization.⁴

(b) *Detail plan*.—A plan, in duplicate, on tracing linen, showing in detail all headworks, dams, flumes, bridges, culverts, or other structures to be erected in connection with the proposed undertaking.

(2) *General plan*.—The applicant shall also file with the commissioner a general plan, in duplicate, on tracing linen, drawn to a scale of not less than one to a mile, showing: (a) The source of supply; (b) the position of the point of in-take; (c) the location of the main canals or ditches; (d) the tract of land to be irrigated; (e) the name of the owner of each parcel of land crossed by the canal or ditch, or by any reservoir or other works connected therewith, or to be irrigated therefrom; and, (f) the position and area of all ponds, reservoirs, and basins intended to be constructed for the storage of water.⁵

16. *Additional material in case of large works*.—In the case of all ditches or canals carrying more than 25 cubic feet of water per second, the applicant shall, in addition to the aforesaid information, furnish in duplicate:

(a) *Profile*.—A longitudinal profile of the ditch, showing the bottom profile and the proposed service water line, with a hori-

⁴ 7-8 E. VII, c. 38, s. 6.

⁵ 61 V., c. 35, s. 11, as amended by 7-8 E. VII, c. 38, s. 6.

Having completed his surveys and finally decided upon his project, he should next file with the commissioner—

(a) A memorial containing full information as to the location, character, and estimated cost of the works, the location and character of the land to be irrigated, and, if water is to be supplied to others, the terms and price to be charged. Sufficient information

should also be furnished to permit the commissioner to judge of the applicant's financial ability to carry out the project.

(b) A general plan of the proposed project.

(c) Detail plans of the necessary structures in connection with the undertaking.

Such memorials and plans shall be open for examination by the public at all times in the Department of the Interior and in the office of the Commissioner of Irrigation.

zontal scale not less than one inch to 400 feet, and a vertical scale not less than one inch to 20 feet;

(b) *Plan of ditches*.—A plan on a horizontal and vertical scale of one inch to 20 feet, showing, when any portion of the water is to be conveyed in full, cross-sections at a sufficient number of points to fully illustrate all the different forms which the ditch when constructed will take, particularly on side hills or elsewhere and showing, when water is to be conveyed in cut, cross-sections at the points where the shortest horizontal distance from either side of the bottom of the ditch to the surface of the ground is less than double the bottom width of the ditch;

(c) *Plan of works in connection with reservoirs*.—Plans of any dams, cribs, embankments, or other works by which it is proposed to create or which may have the effect of creating a pond, reservoir, or basin of water, or by which it is proposed to obstruct or which may have the effect of obstructing any river, stream, lake, or other source of water supply, which plans shall be prepared on a longitudinal scale of not less than one inch to 100 feet, and for cross-sections on a scale of not less than one inch to 20 feet, and shall show in detail on a scale of not less than one inch to four feet, the timber, brush, stone, brick, or other material intended to be used and how it is intended to be placed in such works; and,

(d) *Cross-section maps*.—Cross-section maps or plans, the horizontal scale of which shall not be less than one inch to 100 feet and the vertical scale of which shall not be less than one inch to 20 feet.

(2) *What the cross-section maps shall show*.—Such cross-section maps or plans shall show: (a) The surface of the ground under such pond, reservoir, or basin of water, and the surface of the water proposed to be held therein; (b) a sufficient number of lines of levels, so that the contents of the pond, reservoir, or basin of water may be accurately determined.

(3) *Scale*.—If the maps or plans show the levels by contour lines they shall be on a scale sufficiently large that the contour lines shall show a vertical distance between them not exceeding one foot.

(4) *Further particulars*.—The maps and plans shall also contain sufficient information to show clearly the property likely to be

affected by the creation of such ponds, reservoirs, or basins of water, and the manner in which affected, and shall show in detail, on a scale of not less than one inch to four feet, the proposed manner of controlling and drawing off the water from any such pond, reservoir, or basin.⁶

17. *Memorials and plans to be open for inspection.*—Such memorials and plans when so filed as above prescribed, or a true copy thereof, shall be open for examination by the public at all times in the department and at the office of the commissioner.⁷

18. *Filing elsewhere.*—In any case in which he thinks proper, the Minister may direct that a copy of the memorial and plans shall be filed in such other place or with such other official or person as he names for that purpose.

(2) *Inspection.*—Such copy also shall be open to public inspection.⁸

19. *Public notice of application—Protests to be made within thirty days.*—Public notice of the filing of the memorial and place shall forthwith be given by the applicant in some newspaper published in the neighborhood, to be named by the commissioner, not less than once a week for a period of thirty days, within which time all protests against granting the rights applied for shall be forwarded to the Minister, and such notice shall contain a statement of the nature of the rights applied for, and the general character and location of the proposed works.⁹

⁶ 61 V., c. 35, s. 12.

⁷ 61 V., c. 35, s. 13.

⁸ 61 V., c. 35, s. 14.

⁹ 61 V., c. 35, s. 15.

The application may be refused by the commissioner if it does not comply with the provisions of the law, if after inspection it appears that the project is impracticable from an engineering standpoint, or if the records show that there is not enough water available for the purpose. If, however, the application be approved, it is recorded against the stream or other source from which the water is to be drawn and the applicant is instructed to give public notice of his

application by publication in five weekly issues of a local newspaper named by the commissioner. A copy of each issue of such paper should be forwarded by the applicant to the commissioner for record in his office.

The object of publication is that all interested persons may be informed of the application and given an opportunity of protesting against it if they believe it injuriously affects their interests. If protests are received they are carefully inquired into and, if ascertained to be well founded, the application is either refused or so amended as to remove the cause of complaint.

20. *Memorial and plans to be examined and approved.*—The memorial and plans filed with the commissioner, as herein provided, shall be examined by the chief engineer, and, after they have been approved by him, one copy shall be forwarded for record purposes to the department.

(2) *Minister may authorize construction.*—Upon receipt of such memorial and plans, properly approved, together with a certificate of the commissioner that the proper notice of the filing of such memorial and plans has been published, and that, if such is the case, permission has been granted by the provincial, municipal, or other authorities respectively having jurisdiction in that behalf, or by the board as hereinafter provided, to construct the said works upon, along, across, or under every road allowance, public highway, square, or other public place affected thereby, and after considering all protests filed, the Minister may authorize the construction of the proposed works with such changes and variations as he deems necessary, fixing in such authorization a term within which the construction of the works is to be completed.¹⁰

20a. *Minister's authorization before permission if obtained to cross roads.*—If, as respects any such road allowance, public highway, square, or other public place, the permission of the provincial, municipal, or other authorities, or the order of the board can not be obtained until the works are authorized, the Minister may authorize their construction subject to the condition that before the works are constructed upon, along, across, or under such road allowance, public highway, square, or other public place, the requisite permission shall have been obtained and filed with the commissioner and the commissioner shall have so certified to the Minister.

20b. *Crossing of irrigation works by roads.*—If the provincial, municipal, or other authorities having jurisdiction, authority, or control over any public highway desire to construct such highway over or across the works of any company and can not obtain the consent of the company so to do, or can not obtain such consent otherwise than subject to terms and conditions not acceptable to them, they may apply to the board for leave to construct, maintain, and operate such highway over or across such works.

(2) *Plan to be submitted to board.*—Upon such application the authorities so applying shall submit to the board a plan of the

¹⁰ 7-8 E. VII, c. 37, s. 7.

20—Vol. I.—Kin. on Irr.

works of the company at the point where it is desired to make such crossing and a plan or plans showing the proposed method of constructing the highway over or across the works, and such other plans, drawings, and specifications as the board in any case or by regulation requires.

(3) *Order granting application.*—The board may, by order, grant such application in whole or in part on such terms and conditions as it deems just and proper, subject to the provisions of this Act; may change the plans, drawings, and specifications submitted; may fix the place and mode of crossing and give directions as to the manner in which the crossing is to be constructed; and may order that detailed plans, drawings, and specifications of any structures, equipment, or appliances required shall before construction or erection be submitted to and approved by the board.

(4) *Exercise of powers.*—Upon such order being made, the authorities so applying may exercise the powers granted by the order in accordance with the terms, provisions, and conditions thereby prescribed.

20c. *Application to board to cross roads.*—If the applicant can not obtain the consent of the provincial, municipal, or other authorities having jurisdiction, authority or control over any road allowance, public highway, square, or other public place affected by its works, or can not obtain such consent otherwise than subject to conditions not acceptable to the applicant, the applicant may apply to the board for leave to construct, maintain, and operate the said works upon, along, across, or under such road allowance, public highway, square, or other public place.

(2) *Plan to be submitted.*—Upon such application the applicant shall submit to the board a plan of such road allowance, public highway, square, or public place at a point where it is desired to construct such works upon, along, across, or under the same, and such other plans, drawings, and specifications as the board in any case or by regulation requires.

(3) *Order granting application.*—The board may, by order, grant such application in whole or in part on such terms and conditions as it deems just and proper; may change the plans, drawings, and specifications submitted; may fix the place and mode of crossing and give directions as to the manner in which the crossing

is to be constructed; and may order that detailed plans, drawings, and specifications of any structures, equipment, or appliances required shall, before construction or erection, be submitted to and approved by the chief engineer.¹¹

(4) *Exercise of powers.*—Upon such order being made, the applicant may exercise the powers granted by the order in accordance with the terms, provisions, and conditions thereby prescribed.

20d. *Powers of Board.*—All the applicable provisions of the Railway Act shall, *mutatis mutandis*, apply to the Board in the exercise of the jurisdiction conferred by this Act and to all persons concerned and all things affected by such exercise.

20e. *Crossings of road allowances.*—When an order is made by the board as hereinbefore provided granting leave to construct, maintain, and operate a public highway over or across the works of any company at a point where such works are crossed by a road allowance laid out according to the system of survey provided for by the Dominion Lands Surveys Act, the bridges and approaches thereto necessary for such crossing shall be constructed and maintained by the company.¹²

Excepted works.—Section 20f shall not apply to any company as respects any works for the construction of which it has obtained authorization before this Act comes into force.¹³

21. *Changes ordered by Minister to be filed.*—Any changes and variations ordered by the Minister regarding the plans of the proposed works must be filed by the applicant in the office of the

¹¹ In case no protests have been filed, or after the satisfactory disposal of such as may have been filed, the commissioner issues a certificate to the effect that the applicant has complied with the provisions of the law, and at the same time he recommends the issue of authorization for the construction of the works, specifying the length of time he considers necessary for the purpose. The form of authorization issued to the applicant permits him to construct the works as shown by the memorial and plans filed by him, and fixes the time within

which they are to be completed, but provides that right of way shall be obtained by the applicant before the works are constructed across any lands not owned or controlled by him.

¹² All public highways shall be kept open for safe and convenient travel during the construction of works under the provisions of the Irrigation Act, and substantial bridges shall be constructed by the applicants before the works are taken into use, and such bridges shall always thereafter be maintained by the applicant.

¹³ 7-8 E. VII, c. 38, s. 9.

commissioner, and shall form a portion of the record open for public inspection.¹⁴

22. *Deviation from plans.*—No material deviation from the plans filed shall be made without permission, and any question arising as to whether any deviation is material or otherwise shall be decided by the chief engineer or such other officer as the Minister designates.¹⁵

23. *Filing of plans may be waived in certain cases.*—In the case of applications for water for domestic or irrigation purposes, the Minister may, if he sees fit, waive the necessity for filing the plans required by this Act, and may require the applicants to file a memorial only.

(2) *What memorial shall contain.*—The Minister may order that such memorial shall contain all the information necessary to a full and complete understanding of the rights applied for.¹⁶

§ 191. **Saskatchewan and Alberta—"Irrigation Act"—Mode of acquisition—Construction of works.**—Provisions for the construction of works are as follows:

24. *When work may be commenced.*—The applicant, immediately after the receipt of the authorization, may proceed with the construction of the works authorized.¹

25. *Highways—Bridges.*—Any applicant constructing works under the provisions of this Act shall, during such construction, keep open for safe and convenient travel all public highways theretofore publicly traveled as such, where they are crossed by such works, and shall, before water is diverted into, conveyed, or stored by any such works extending into or crossing any such highway, construct, to the satisfaction of the Minister, a substantial bridge, not less than 14 feet in breadth, with proper and sufficient approaches thereto, over such works.

¹⁴ 61 V., c. 35, s. 16.

¹⁵ 61 V., c. 35, s. 16.

¹⁶ 61 V., c. 35, s. 17.

¹ 61 V., c. 35, s. 19.

Immediately upon the receipt of authorization the applicant should proceed with the construction of the works and, unless such authorization is granted between November 1 and

May 1 following, is required to commence construction within two months of the date of authorization. If the Minister of the Interior so determines, the works shall be subject to inspection during construction and the cost of such inspection may be assessed upon the applicant.

(2) *Maintenance*.—Every such bridge and the approaches thereto shall be always thereafter maintained by such person or company.²

26. *Time for commencing works limited*.—The construction of any work authorized under this Act shall be commenced not later than two months after the date of the authorization, unless such two months expire between the first day of November and the first day of May following, in which case the time of commencement shall not be later than the first day of May following, and shall proceed continuously until sufficiently completed to supply water to all persons applying therefor within the area described in the authorization, provided there is sufficient water available for that purpose; and the Minister, or such officer as he designates, shall be the sole arbiter as to whether the work is being prosecuted with sufficient vigor.

(2) *Extension of time in case of disaster*.—Should any unforeseen disaster intervene to prevent the construction or completion of the works within the time limited, or, if for any other reason the Minister deems it expedient, he may authorize an extension of time for the commencement or completion of the works.³

27. *Inspection of works*.—Any works authorized under this Act shall, if the Minister so determines, be constructed subject to inspection during construction by the chief engineer or any other officer to be named by the Minister.

(2) *Cost*.—The cost of such inspection or such portion thereof as the Minister decides, shall be borne by the licensee constructing such works.⁴

§ 192. **Saskatchewan and Alberta**—“**Irrigation Act**”—**Expropriation**.—The provisions for the acquisition of rights of way and lands required for the works of any applicant are as follows:

28. *Applicant to have powers of railway company for purposes of construction*.—The applicant, after the receipt of the authorization, may proceed with the construction of the works authorized, and for the purposes of such construction shall have the powers

2 61 V., c. 35, s. 37.

3 61 V., c. 35, s. 20.

Should any unforeseen disaster occur to prevent the construction or completion of the works within the time

limit, or if for any other reason the minister deems it expedient, he may authorize an extension of time.

4 61 V., c. 35, s. 18.

conferred by the Railway Act upon railway companies so far as the same are applicable to the undertaking of the applicant and are not inconsistent with the provisions of this Act or with the authority given to the applicant, the provisions conferring such powers being taken for this purpose to refer to any work of the applicant where in the said Act they refer to the railway.¹

29. *Power to take lands.*—Lands required for the works of any applicant, as shown by the maps and plans filed, in whomsoever they are vested, whether in the Crown or in any other applicant or licensee, or in any railway company, or in any other person whomsoever, or any interest in or right or privilege with regard to such land which is so required, may be taken and acquired by such first mentioned licensee; and to this end all the provisions of the Railway Act which and so far as they are applicable to such taking and acquisition, shall apply as if they were included in this Act, the Minister and the Department being substituted for the Minister of Railways and Canals and the Department of Railways and Canals, respectively, wherever in the provisions of the said Act the latter Minister and Department are referred to: Provided, that the Minister may impose such terms and conditions as he thinks proper in the public interest in connection with the acquisition under this section of any lands which are vested in any other applicant or licensee, or in any railway company, or of any interest in such lands or any right or privilege affecting such lands.

(2) *Compensation.*—All the provisions of the Railway Act

¹ 61 V., c. 35, s. 19.

The form of authorization for the construction of works empowers the applicant to expropriate any public or private lands necessary for his purpose. Permission must, however, be obtained from the provincial, municipal, or other authorities having control over any public highway or road-allocation for the construction of the works across such, and, in the event of such consent not being obtained, provision is made in the Act for referring the application to the Board of Railway Commissioners, who have

power to grant the necessary permission, either wholly or in part, or subject to such modifications in plan as may seem necessary, and upon such terms and conditions as may seem to be in the public interest.

Public or private lands, other than public highways, may be acquired by expropriation in the same manner as in the case of lands required for railway purposes, but the Minister of the Interior shall be the sole arbiter as to the area which may be taken without the owner's consent.

which are applicable shall in like manner apply to fixing the amount of and the payment of compensation for damages to lands arising out of the construction or maintenance of the works of the applicant or out of the exercise of any of the powers granted to him under this act.²

29a. *Lands for connecting works.*—Lands required by any person for works to be constructed to connect with and to obtain and carry water from works already authorized, plans of which have been filed as required under the provisions of this Act, may be taken and acquired by the said person under the provisions of Section 29 of this Act upon his filing with the commissioner a memorial and plans of the connecting works, together with evidence in writing that the owner of the works already authorized has consented to water being diverted therefrom by means of such connecting works, and obtaining thereupon the authorization of the Minister for the construction of such connecting works.³

30. *Company may construct telegraph and telephone lines, etc.*—The applicant may, for the purpose of his undertaking, construct or acquire electric, telegraph, and telephone lines or any other contrivance for the transmission of messages through or along wires, rods, tubes, or other appliances, and may acquire any land necessary for the construction and operation of such lines or contrivances, and the lands necessary to be taken and acquired for this purpose may be acquired under the provisions of the last preceding section.⁴

31. *Maps, etc., to be certified and filed.*—All maps, plans, and books of reference showing any lands other than Crown lands necessary to be acquired under the provisions of this Act, by any applicant for right of way or for any purpose in connection with the construction and maintenance of the works, must be signed and certified as correct by a duly qualified Dominion land surveyor.

(2) *In duplicate.*—Such maps, plans, and books of reference shall be prepared in duplicate, and one copy shall be filed in

² 61 V., c. 35, s. 21.

³ 7-8 E. VII, c. 38, s. 10.

Plans of right of way required over private lands shall be signed and certified by a Dominion land surveyor

and registered in the local land titles office. An additional copy of such plans shall be filed in the Commissioner's office.

⁴ 61 V., c. 35, s. 50.

the office of the commissioner and the other registered by the applicant in the land titles office for the registration district within which the lands affected by such surveys are situated.⁵

32. *Disputes as to area to be taken.*—The Minister, or such officer as he designates, shall, in case of dispute, be the sole arbiter as to the area of land which may be taken by the applicant without the consent of the owner for any purpose in the construction or maintenance of the works.⁶

§ 193. **Saskatchewan and Alberta—"Irrigation Act"—Licenses and licensees.**—Upon the subject of the issuance of licenses and the rights of the licensees thereunder it is provided:

33. *Inspection of works on completion.*—Upon the expiration of the time mentioned in the authorization for the construction of any works, or at any time before such date, if the construction is sooner completed, an inspection shall be made by the chief engineer or such other officer as the Minister appoints.

(2) *Certificate.*—If the chief engineer upon such inspection is satisfied that the works have been completed in accordance with the application, that the right of way for the works has been obtained, that agreements have been entered into for the supply of water for the irrigation of lands which are not the property of the applicant, and that the works as constructed are capable of carrying and utilizing a stated quantity of water, he shall issue and forward to the Department a certificate setting forth the facts.

(3) *License.*—Upon receipt of such certificate the Minister shall issue a license to the applicant for the quantity of water to which he is entitled, and such license shall be recorded in the office of the commissioner.¹

⁵ 61 V., c. 35, s. 22.

⁶ 61 V., c. 35, s. 23.

¹ 61 V., c. 35, s. 24.

Upon completion of the works an inspection shall be made by the commissioner or other officer appointed for the purpose. If, after such inspection, the commissioner is satisfied:

(a) That the works have been completed in accordance with the application;

(b) That right of way has been obtained;

(c) That agreements have been made and filed for the supply of water for the irrigation of lands which are not the property of the applicant; and

(d) That the constructed works are capable of utilizing the required quantity of water, he shall issue and forward to the department a certifi-

34. *Priority of right.*—Licensees shall have priority among themselves according to the number of their licenses, so that each licensee shall be entitled to receive the whole of the supply to which his license entitles him, before any licensee whose license is of a higher number has any claim to a supply.²

(2) *Settlement of disputes.*—If a complaint is made to the Minister, or to an officer authorized by him to receive such complaints, that any licensee is receiving water from a source of supply to which another licensee is entitled by virtue of priority of right, and that the licensee having such priority of right is not receiving the supply to which he is entitled, some officer to be named by the Minister, or the officer to whom complaint is so made, as the case may be, shall inquire into the circumstances of the case, and if he finds that there is ground for the complaint, shall cause the headgates of the ditch or other works of the licensee who is receiving an undue supply of water to be closed, so that the supply to which the other licensee is entitled shall pass and flow to his works.³

35. *Licensee's rights limited by capacity of works.*—When any works for carrying water are not of sufficient capacity to carry the quantity of water acquired by their owner, his exclusive right shall be limited to the quantity which such works are capable of carrying.

(2) *Inspection.*—In case of dispute as to such quantity, the Minister may order an inspection of the works.

(3) *Report final.*—The report and finding of the inspecting officer as to the capacity thereof shall, for the purpose of this section, be final and conclusive.⁴

cate setting forth the facts. A license is then issued to the applicant for the quantity of water to which he is entitled, based upon the area to be irrigated and the "duty of water" as fixed by the Minister. A fee of \$10 is charged for each such license.—Bul. No. 1, Irr. Series, Dept. of Int., Canada, p. 8.

² The rights of licensees are determined by the numbers borne by their licenses, and these are assigned on the dates when their applications for

water rights are accepted and filed in the office of the commissioner. Each licensee is entitled to receive the whole of the supply called for by his license before any licensee whose license bears a higher number has any right to a supply. Thus, the right of each applicant is protected against all subsequent applicants, provided he complies with the law and proceeds in good faith to complete his works.

³ 61 V., c. 35, s. 25.

⁴ 61 V., c. 35, s. 26.

36. *No discrimination in prices after stated time.*—No licensee undertaking to sell water conveyed by his works shall, subsequent to the first four years after the construction of such works as are necessary to convey the water to the user, discriminate between the users of such water regarding the price thereof.

(2) *If supply of water is insufficient.*—If from any cause the whole amount of water agreed to be supplied by a licensee is not available, the licensee shall furnish to each user so much water as shall bear to the available water the same proportion as his usual supply bears to the whole amount agreed to be furnished.⁵

37. *Storage of water.*—The Minister may grant to any licensee the right, during periods of flood or high water or during those portions of the year when water is not required for irrigation purposes, to store for such purposes any water which is not required or not being used therefor.

(2) *Utilization for such purpose of existing works.*—Should there be any works for the carriage of water which are not being utilized to their full capacity by their owner, and which can with advantage be utilized to carry the whole or any portion of the water to be stored any portion of the distance it is required to be so carried or conducted, without interfering with the use made of the said works by their owner, then the said works shall be placed at the disposal of the licensee desiring to so use them.

(3) *Minister may fix rate of compensation.*—If the parties can not agree upon the amount of compensation for such service, the Minister may fix the rate to be paid therefor.⁶

38. *Disposal of surplus water to applicants.*—Any licensee shall dispose of any surplus water flowing in his works which is not being utilized for the purposes authorized, to any person

⁵ 61 V., c. 35, s. 35.

⁶ 61 V., c. 35, s. 36.

The Minister may grant to any licensee permission to store flood water which is not required or being used for any purpose, and if any works for the carriage of water are not being utilized to their full capacity by their

owner, the Minister may permit of the use of such works by any licensee for the carriage of such water. If the respective parties fail to agree upon terms the Minister may fix the rate to be paid.—Bulletin No. 1, Irr. Series, Dept. of Int., p. 9.

applying therefor for irrigation purposes and tendering payment for one month in advance at the regular prices.

(2) *Payment by applicant.*—The delivery of such surplus water need not be made until the persons so applying pay or tender an amount equal to the cost and expense of the works required to convey the surplus water to them, or until they shall themselves construct such works.

(3) *Quantity of water to which applicant is entitled.*—When the necessary works have been so constructed the applicant shall be entitled to the use of so much of the surplus water as such works have the capacity to carry.

(4) *Limitation.*—Nothing in this section shall be considered to give to any person acquiring the right to use surplus water any right to the said surplus water when it is needed by the licensee for the purposes authorized, or to waste or sell or dispose thereof after being used by him, or shall prevent the original owners from retaking, selling, or disposing thereof in the usual customary manner after it has been so used as aforesaid.⁷

§ 194. **Saskatchewan and Alberta**—"Irrigation Act"—**Complaints and inspection.**—The provisions for complaints and the inspection of the works are as follows:

39. *Order by Minister in case of complaint against licensee.*—When a complaint, under oath of the complainant and of at least one witness, is made to the Minister or the commissioner by a customer of water who has paid his rates, that a licensee who has engaged or is under obligation to supply him with water is failing to do so, or is failing to keep his works in proper condition, the Minister or some person or officer appointed by him for the purpose may make immediate inquiry and take all necessary steps to ascertain the truth of the complaint, and, if he considers the complaint established, may order and direct that the licensee shall take forthwith such action as he considers necessary in order, as far as possible, to remove the cause of complaint.

(2) *Certificate by Minister if order disobeyed.*—If the licensee

fails to obey such order, the Minister shall forthwith issue a certificate to that effect, reciting all the facts.¹

(3) *Reference to judge.*—In the Province of Saskatchewan or Alberta the judge of the Supreme Court of the Northwest Territories for the judicial district in which such works lie, pending the abolition of that court by the legislature of the Province, and thereafter any judge of such superior court as in respect of civil jurisdiction is established by the legislature of the Province in lieu thereof, and in the Northwest Territories a stipendiary magistrate having jurisdiction in the district or place where such works lie, upon the production of such certificate, shall hear and determine the matter in a summary manner, and shall order the licensee to proceed with all dispatch to take such measures as the judge or magistrate considers necessary in the premises.

(4) *Refusal to obey order of judge.*—The refusal or neglect to obey any order made by the judge or magistrate under this section may be treated and punished as contempt of court, and such other proceedings may be had and taken thereon as in the case of non-compliance with any other mandatory order of the said court or a judge thereof.²

40. *Disputes as to quantity diverted.*—In case of dispute as to quantity of water diverted, the Minister may order an inspection of the works of the licensee by an officer named by him for that

1 Very complete provision is made for ensuring that companies undertaking to supply water for irrigation purposes shall live up to their obligations. As has already been said, the rates to be charged for water and the general form of the agreements for its supply are subject to the approval of the Minister, and copies of all such agreements must be filed in the office of the commissioner and in the Department. In addition to this the Minister is empowered to inquire into such complaints as may be brought to his notice, and to take such action as he may consider necessary to remove the cause thereof. Upon failure by any licensee to obey the Min-

ister's order the matter may be referred to the courts.

If, after inspection, it shall be shown to the Minister's satisfaction that any works, either completed or under construction, are injuriously affecting the interests of others, he may order such changes in the works as he may consider necessary for the purpose of removing the cause of complaint, and upon failure of an applicant or licensee to obey such order the minister shall refer the matter to the courts for summary hearing and such remedial action as the judge or magistrate may consider necessary.—Bulletin No. 1, Irr. Series, Dept. of Int., p. 9.

2 61 V., c. 35, s. 40.

purpose; and for all purposes of this Act, the report and finding of such officer as to the quantity diverted shall be final and conclusive.³

41. *Inspection on application of proprietor near works.*—Should any person residing on or owning land in the neighborhood of any works, either completed or in course of construction, apply to the Minister in writing for an inspection of such works, the Minister may order an inspection thereof.

(2) *Deposit to be made by applicant.*—The Minister may require the person so applying to make a deposit of such sum of money as the Minister thinks necessary to pay the expenses of an inspection, and in case the application appears to him not to have been justified, may cause the whole or part of the expenses to be paid out of such deposit.

(3) *Enforcing payment of costs.*—In case the application appears to the Minister to have been justified, he may order the applicant for a license, or the licensee, to pay the whole or any part of the expenses of the inspection, and such payment may be enforced as a debt due to the Crown.

(4) *Works, etc., to be made secure.*—Upon any inspection under the provisions of this section the Minister may order such applicant or licensee to make any addition or alteration which he considers necessary for their security to or in any works of the applicant or licensee, and if the applicant or licensee fails to obey such order, the Minister shall forthwith issue a certificate to that effect, reciting all the facts, and, in the Province of Saskatchewan or Alberta, the judge of the Supreme Court of the Northwest Territories for the judicial district in which such works lie pending the abolition of that court by the legislature of the Province, and thereafter any judge of such superior court as in respect of civil jurisdiction is established by the legislature of the Province in lieu thereof, and, in the Northwest Territories, a stipendiary magistrate having jurisdiction in the district or place where such works lie upon the production of such certificate, shall hear and determine the matter in a summary manner and shall order the applicant or licensee to proceed with all dispatch to take such measures as the judge or magistrate con-

siders necessary in the premises; and the refusal or neglect to obey any order made by the judge or magistrate under this section may be treated and punished as contempt of court, and such other proceedings may be had and taken thereon as in the case of non-compliance with any other mandatory order of the said court or judge thereof.

(5) *Section not to apply.*—This section shall not apply to cases where the Minister waives the filing of plans.⁴

42. *Information to be afforded to inspecting officer.*—Every applicant or licensee and the officers and directors of the applicant or licensee, if an incorporated company, shall afford to any inspecting officer such information as is within their knowledge and power in all matters inquired into by him, and shall submit to such inspecting officer all plans, specifications, drawings, and documents relating to the construction, repair, or state of repair of the works or any portion thereof.

(2) *Proof of his authority.*—The production of instructions in writing, signed by the Minister or his deputy or the secretary of the Department, shall be sufficient evidence of the authority of such inspecting officer.⁵

§ 195. **Saskatchewan and Alberta—"Irrigation Act"—Amalgamation of companies.**—Provisions are made for the amalgamation and consolidation of companies, as follows:

43. *Procedure and requirements.*—The Governor in Council may authorize two or more companies whose works are contiguous, no one of which is an irrigation district incorporated under an ordinance of the Northwest Territories, to unite and form one company with a view to providing increased water supply and extending their works, when he is satisfied that: (a) The holders of more than 50 per centum of the capital stock of each company are in favor of the union; (b) the users dependent upon the water supply will not be injured; and, (c) the companies to be united have the necessary financial means for carrying out the proposed undertaking.

(2) *Particulars.*—In such case the same particulars shall be furnished to the Governor in Council as are required to be fur-

⁴ 61 V., c. 35, s. 18.

⁵ 61 V., c. 35, s. 28.

nished upon an application for authorization to construct works under this Act.

(3) *Notice*.—Public notice of the authorization of the united companies and their proposed works shall be given in the manner prescribed by this Act respecting the publication of a notice of filing of memorials and plans.¹

§ 196. **Saskatchewan and Alberta—"Irrigation Act"—Expropriation, cancellation, and forfeiture by the Government.**—Provisions for the expropriation of works of private parties by the Government, the cancellation of licenses, and the forfeiture of rights by the Government, are as follows:

44. *Expropriation of works by the government*.—The Governor in Council may, if in the public interest it is at any time deemed advisable so to do, take over and operate or otherwise dispose of the works of any licensee authorized under this Act: Provided, that no person who is then using the waters of the said works shall be deprived of the quantity of water to which he is entitled, and that the Governor in Council shall have due regard to the claims to consideration of any persons who have prepared, or have in course of preparation, any land to be supplied with water by the works taken over.¹

(2) *Compensation*.—Compensation shall be paid for such works at such value as shall be ascertained by reference to the Exchequer Court, or by arbitration, one arbitrator to be appointed by the Governor in Council, the second by the licensee, and the third by the two so appointed, or, in case these can not agree as to the third arbitrator, by the Exchequer Court.

(3) *Measure of*.—In estimating such value the Court or the arbitrators may take into account the expenditure of the licensee and the interest on such expenditure, and the value of his property, works, and business.²

¹ 61 V., c. 35, ss. 41 and 54.

¹ The Governor in Council is empowered to take over, operate, or otherwise dispose of any works authorized under the Irrigation Act, if he deems such action advisable in the public interest, having due regard to

the rights of all persons dependent upon such works for water supply. The rate of compensation to be paid for works so taken shall be fixed by arbitration.—Bulletin No. 1, Irr. Series, p. 10.

² 61 V., c. 35, s. 46.

45. *Cancellation of license and reservation of water right in certain cases.*—When the land to be irrigated by the water granted to a licensee is land for which letters patent from the Crown have not been issued, being held by the licensee under a homestead or other conditional entry or a lease in accordance with the provisions of the Dominion Lands Act, or under an agreement to purchase such land, the license for such water shall be cancelled upon receipt by the Minister of a certificate of the cancellation of such homestead or other conditional entry, lease, or agreement: Provided, that the water right necessary for the irrigation of such land may be reserved for such time as the Minister determines, and may be disposed of, together with all works connected therewith, to the next occupant or purchaser of such land, upon such terms and conditions as the Minister determines.

(2) *New license.*—The new license issued for such water shall have the same number and hold the same priority of right as the original or cancelled license.³

46. *Forfeiture of licensee's rights by waste or nonuser.*—When any licensee abandons or ceases to use or wastes any water to which his license entitles him, and any charge of such abandonment or ceasing to use or wasting water is made to the Minister, such charge may be inquired into by him or by any person or officer appointed by him for that purpose.

(2) *By Minister.*—The Minister, if he deems just and proper, may, by order, declare a forfeiture of the license, and the license so ordered or declared to be forfeited shall be cancelled and shall cease and determine.⁴

47. *Forfeiture of rights held prior to July 1, 1898, if license not taken.*—Unless he had been duly licensed under the Northwest Irrigation Act of 1894, or unless he obtained a license under

³ 61 V., c. 35, s. 27.

⁴ 61 V., c. 35, s. 33.

When any charge is made to the Minister that any licensee has abandoned, or ceased to use, or is wasting water, such charge may be inquired into and, if found true, the license may be canceled, if the Minister so orders.

If any authorized works are not completed within the time granted for the purpose, the applicant's rights shall cease, except in so far as they are necessary for the operation of that portion of the works then completed.—Bulletin No. 1, Irr. Series, p. 8.

the provisions of the Northwest Irrigation Act, 1898, the interest of any person in water rights of a class similar to those which might be acquired under the said last mentioned Act, held immediately prior to the thirteenth day of June, one thousand eight hundred and ninety-eight, or in works constructed and in operation for the utilization of water immediately prior to that date, shall, without any demand or proceeding, be absolutely forfeited to the Crown, and shall be disposed of or dealt with as the Governor in Council sees fit.⁵

48. *Forfeiture of rights if works are not completed within time limited.*—Upon the expiration of the time limited under the provisions of this Act, or under an extension granted by the Minister for the completion of any authorized work, the rights granted to the person or company shall cease and determine, except in so far as they are necessary for effectually operating the works then completed, and any works at the date of such forfeiture constructed or acquired, may be taken over and operated or disposed of by the Minister in the manner and upon the terms hereinbefore provided.⁶

§ 197. **Saskatchewan and Alberta—“Irrigation Act”—General provisions.**—The general provisions relating to the by-laws of companies, water rates, and agreements with consumers are as follows:

49. *By-laws of company.*—The by-laws and regulations of companies operating under this Act shall be subject to revision and approval by the Minister and shall not contain anything contrary to the true intent and meaning of this Act.

(2) *Tariff of charges.*—No tariff of charges for water furnished by any licensee shall come into operation until it has been approved by the Minister.¹

(3) *Agreements with consumers.*—No agreement for the supply of water to consumers by companies operating under this Act shall contain anything contrary to the true intent and meaning of this Act, nor shall any such agreement become effective unless the general form thereof and the conditions contained therein have been first authorized by the Minister.

⁵ 61 V., c. 35, s. 7.

1 61 V., c. 35, s. 47.

⁶ 61 V., c. 35, s. 20.

21—Vol. I—Kin. on Irr.

(4) *Filing of by-laws, tariffs, and agreements.*—Copies of all such by-laws, regulations, agreements, and tariffs shall be filed in the office of the commissioner and in the Department.²

50. *Borrowing powers.*—Any company authorized under this Act, and which is not an irrigation district incorporated under an ordinance of the Northwest Territories, may issue bonds, debentures, or other securities to the amount of its subscribed capital, or double the amount of its paid-up capital, whichever is the smaller amount.³

51. *Company may acquire lands for improvement by irrigation.*—Any company authorized under this Act, and which is not an irrigation district incorporated under an ordinance of the Northwest Territories, may acquire land by purchase or lease for improvement by irrigation.

(2) *Disposal of lands within 15 years.*—The company shall dispose of such land within fifteen years after acquiring the same, except such lands as are actually under cultivation or are being used for farming, gardening, stock-raising, dairying, horticulture, tree-planting, and forestry; provided, that the lands so excepted do not comprise more than 10 per centum of the total area of land brought under irrigation by the company.

(3) *Otherwise to revert.*—Any of such lands not so disposed of shall revert to the Crown.⁴

52. *Annual return by company.*—Every company obtaining a license under this Act, shall, on or before the thirty-first day of January in each year, make a return to the Minister, attested by the oath of its president and secretary, for the year ending the thirty-first day of December preceding, showing: (a) The amount expended on construction; (b) the amount expended on repairs; (c) the amount received from shareholders; (d) the amount of bonds issued; (e) the amount received for water supplied for irrigation; (f) the amount received from other sources; (g) the amount of dividend declared and paid; (h) the amount of capital stock authorized; (i) the amount of capital stock subscribed; (j) the amount of capital stock paid up to date; (k) the amount of bonded indebtedness; (l) the amount bonds sold for; (m) the rate of interest bonds bear; (n) the amount of indebted-

² 7-8 E. VII, c. 38, s. 11.

⁴ 61 V., c. 35, ss. 49 and 54.

³ 61 V., c. 35, ss. 48 and 54.

ness other than bonds, and the rate of interest such indebtedness is bearing; (o) the cost of management; (p) the works, and their extent and character; (q) the number of miles of canals, ditches, etc.; (r) the number of users; (s) the number of acres actually under irrigation; (t) the number of acres of irrigable land in the system; (u) the names of officers and employees; (v) the proposed extensions during ensuing years and the acreage to be covered thereby; and, (w) such other data as the Governor in Council sees fit to order.

(2) *Copy of by-laws.*—Such annual return shall have attached thereto a copy of the by-laws of the company, showing all amendments thereto during the year covered by the said return.

(3) *Exception.*—The returns required by this section may be waived by the Minister in the case of a private person supplying water solely to himself.⁵

§ 198. **Saskatchewan and Alberta—"Irrigation Act"—New Provinces.**—53. *Administration in new Provinces.*—The Governor in Council may, by order, make provision for the administration of this Act, within the Provinces of Saskatchewan and Alberta and any Province established in any portion of the Northwest Territories, and for the appointment of such officers and persons, and the designation of such places for the filing or deposit of applications, memorials, maps, plans, books of reference, and other documents and things, and for the recording of licenses, and for the designation of such other places as are deemed necessary for the purposes of such administration.

561 V., c. 35, s. 39.

Each company obtaining a water license is required to file a return in January of each year, giving a comprehensive statement of its operations, including statements of all receipts and disbursements, the mileage of canals and ditches constructed, the number of water users, and the acreage actually under irrigation. Copies of all by-laws, regulations, agreements, and tariffs must also be filed, and the general form of, and the condi-

tions contained in, agreements for the supply of water, as well as the rate to be charged for water, must be submitted to and approved by the Minister before coming into operation. Thus in addition to a careful scrutiny of each application before acceptance, very complete supervision and control is afterward provided, in order that the interests of water users may be adequately protected.—Bulletin No. 1, Irr. Series, p. 9.

(2) *Publication*.—Any such order shall be published in the "Canada Gazette." ¹

§ 199. **Saskatchewan and Alberta—"Irrigation Act"—Powers of Minister.**—54. The Minister may—

(a) *Measure of water*.—Define the manner in which the measure of water shall be arrived at;

(b) *Duty*.—Define the duty of water according to locality and soil;

(c) *Time*.—Define the portion of the year during which water shall be supplied for irrigation;

(d) *Licenses, fees*.—Fix the fees or charges to be paid for licenses issued under this Act, which fees or charges may be varied according to capital employed or volume of water diverted;

(e) *Diversion*.—Regulate the extent of diversion from rivers, streams, lakes, or other waters;

(f) *Passage of logs*.—Regulate the passage of logs, timber, and other products of the forest through or over any dams or other works erected in rivers, streams, lakes, and other waters under the authority of this Act;

(g) *Water rates*.—Regulate from time to time the water rates which may be charged by licenses, and the publication of tariffs of rates;

(h) *Forms*.—Prescribe forms to be used in proceedings under this Act;

(i) *Penalties*.—Impose penalties for violations of any regulation made under the authority of this Act, which penalties shall in no case exceed a fine of \$200 or three months' imprisonment, or both;

(j) *Supply of water*.—Regulate the manner in which water is to be supplied to persons entitled thereto, whether continuously or at stated intervals, or under both systems;

(k) *Determination of disputes*.—Authorize some person or officer, whose decision shall be final and without appeal, to decide in cases of dispute as to what constitutes surplus water as mentioned in this Act;

(l) *Generally*.—Make such orders as are deemed necessary, from time to time, to carry out the provisions of this Act accord-

ing to their true intent, or to meet any cases which arise and for which no provision is made in this Act;

(m) *Idem*.—Make any regulations which are considered necessary to give the provisions of this Act full effect;

(n) *Water gauges*.—From time to time authorize the establishing in rivers, streams, lakes, and other waters, water gauges for computing the approximate volume and discharge of waters, the placing of high-water marks on rivers and streams, lakes, and other waters when in flood, the taking of steps for securing analyses of the water of rivers, streams, lakes, and other waters, and the adopting of such other measures and proceedings for promoting the beneficial use of water, and for controlling and regulating the diversion and the application thereof as he finds necessary and expedient and as are consistent with the provisions of this Act;

(o) *Power of Minister to secure surveys and estimates*.—Take such steps as he deems necessary at any time to secure a complete or partial survey of the sources of the water supply for irrigation and other purposes, with an estimate of the extent and location of irrigable lands and of the site or sites suitable for ponds, basins, and reservoirs for water storage and irrigation canals and ditches, and reserve lands forming such sites from general sale and settlement and dispose thereof by sale or lease, to be utilized for the purposes within the purview of this Act. Where any of the lands required for such purposes are not Dominion lands, the Governor in Council may acquire title thereto by expropriation, and for this purpose all the provisions of “The Expropriation Act,” which, and so far as they are applicable to such acquisitions, shall apply as if they were included in this Act;

(p) *Protection of sources of supply*.—Take such steps as he thinks necessary to protect the sources of water supply and to prevent any act likely to diminish or injure such supply.¹

1 61 V., c. 35, ss. 44, 45, and 51, as amended by 9-10 E. VII, c. 34, s. 2.

Under section 54 of the Act the Minister is given general power to make such orders and regulations as may be necessary to carry out the provisions of the Act according to

their true intent and to meet any cases which may arise and for which no specific provision is made. Among the more important of the regulations so far made are the following:

Measurement of water. Detailed instructions have been given for ascer-

55. *Minister may issue subpoena.*—The Minister or any one specially authorized by him may, when he deems it necessary for the satisfactory carrying out of the provisions of this Act or the regulations to be framed under it, summon before him any person

taining the volume of water carried by any stream and the measurement of the quantity diverted therefrom, for the establishment of gauge rods in the streams and for standard measuring devices at the headgates of diversion canals and ditches.

Duty of water. The ratio between a given quantity of water and the area of land it will irrigate has been fixed at one hundred and fifty acres for each cubic foot of water per second flowing constantly throughout the "irrigation season" and all licenses are issued upon this basis.

Irrigation season. The portion of the year during which water may be used for irrigation purposes has been defined as the period from the 1st of May to the 30th of September.

License fees. A fee of \$10 is charged for each license and a separate license is issued to each person for each stream from which water is diverted. It is not the intention to derive revenue from the issue of licenses, but merely to cover the cost of preparation and issue.

Right of way. Right of way for irrigation canals or other works in connection therewith is granted free of charge over Dominion lands and such right of way, whether over Dominion or private lands, is limited to a strip of thirty feet in width, exclusive of the width of the ditch, the intention being to limit the grant to such land as may actually be required to give access to the works for the purpose of repairs.

Forms. The Minister may prescribe the forms to be used in carry-

ing out the provisions of the Act and suitable forms have been adopted where necessary.

• *Surveys, etc., and reservation of land.* The Minister is empowered to make such surveys as may be necessary to determine the quantity of water available for use under the provisions of this Act; to establish water gauges for computing the volume of discharge at the various stages of streams; to regulate the extent of diversions so as to secure a beneficial use of the available supply; to reserve from general sale and settlement such Dominion lands as may be required for reservoirs or other purposes in connection with irrigation, and to acquire by expropriation any private lands similarly required. Lands so reserved or acquired may be disposed of by sale or lease for utilization under the provisions of this Act.

Leasing of reservoir sites. Suitable sites for reservoirs in connection with any authorized irrigation scheme may be leased for the purpose of water storage, and such leases may be renewed from time to time at the will of the lessee so long as he continues to use the lands for such purposes and complies with all the provisions of the Irrigation Act. Should the lessee cease to use the lands for the purposes mentioned the lease shall be cancelled and the lands will then become available for lease to any other applicant upon similar terms. The annual rental of land for reservoir purposes is at present fixed at twenty-five cents per acre.—Bulletin No. 1, Irr. Series, pp. 10, 11.

by subpoena, examine such person under oath, and compel the production of papers and writings.

(2) *Penalty for disobeying it.*—Upon neglect to obey such summons or refusal to give evidence, or to produce the papers or writings demanded of him, the Minister or the person authorized may, by warrant under his hand, order the person in default to be imprisoned in the nearest common jail as for contempt of court, for a period not exceeding fourteen days.²

56. *Before whom affidavits, etc., may be taken.*—All affidavits, oaths, solemn declarations or affirmations required to be taken under this Act, or any regulation made thereunder, may be taken before the Chief Engineer, or any person specially authorized by the Minister to take them, or any other person authorized to take affidavits in the Provinces of Saskatchewan or Alberta, or the Northwest Territories.

(2) *Minister may require verification by affidavit.*—The Minister may require any statement called for under this Act, or under any such regulation, to be verified by oath, affidavit, affirmation, or declaration.³

57. *Publication of regulations.*—All regulations made and forms prescribed by the Minister under this Act shall be published in the “Canada Gazette,” and shall be laid before both Houses of Parliament within the first fifteen days of the session next after the date thereof.⁴

§ 200. **Saskatchewan and Alberta—“Irrigation Act”—Penalties.**—The provisions relative to crimes and offenses, as provided by the Act, are as follows:

58. *Obstructing inspecting officer—Penalty.*—Every person who wilfully obstructs an inspecting officer in the inspection of his duty shall be liable, on summary conviction, to a penalty not exceeding \$20, or to imprisonment for a term not exceeding two months, with or without hard labor, or to both.¹

59. *Obstructing engineer or surveyor—Penalty.*—Every person who interrupts, molests, or hinders in this work any engineer or Dominion land surveyor engaged in making surveys or levels, or in other operations in connection with any work authorized

2 61 V., c. 35, s. 42.

3 61 V., c. 35, s. 43.

4 61 V., c. 35, s. 52.

1 61 V., c. 35, s. 29.

under this Act, is guilty of an offense, and liable, on summary conviction, to a penalty not exceeding \$20, or to imprisonment for a term not exceeding two months, or to both.²

60. *Improper diversion by any person—Penalty.*—Every person who wilfully, without authority, takes or diverts any water from any river, stream, water course, lake, creek, spring, ravine, canyon, lagoon, swamp, marsh, or other body of water, or from any works authorized under this Act, and every licensee or other person who takes or diverts therefrom any greater quantity of water than he is entitled to, is guilty of an offense, and liable, upon conviction, either summary or upon indictment, to a fine not exceeding \$5 per day or fraction of a day for each unit or fraction of a unit of water improperly diverted, or to imprisonment for a term not exceeding thirty days, or to both.³

61. *Discriminating between the users of water.*—Every licensee under obligation to sell water conveyed by his works who, after the expiration of four years from the time of completion of the works so as to convey the water to the user, discriminates between the users of such water regarding the price thereof, or who in case of a deficiency in the whole amount agreed to be supplied, discriminates between the users of the water regarding the proportionate quantity to be furnished to each user, shall be guilty of an offense against this Act and liable, upon summary conviction, to a fine not exceeding \$1,000 for each and every such offense, or to imprisonment for a period not exceeding two months, or to both.⁴

61b. *Application of provincial laws respecting drainage.*—Notwithstanding anything in this Act contained, the Minister may, upon the application of the proper officer of the Province, approve of the construction of any ditch or drain proposed to be constructed under the authority of an Act providing for the drainage of lands, enacted by the legislature of any Province to which the "Irrigation Act" applies.

(2) *Report by commissioner on proposed drainage works.*—Before such approval is given, there shall be filed in the office of the commissioner a general description of the land which it

² 61 V., c. 35, s. 30.

⁴ 61 V., c. 35, s. 35.

³ 61 V., c. 35, ss. 31 and 32, as

amended by 7-8 E. VII, c. 38, s. 12.

is proposed to drain, and the nature and location of the proposed ditch or drain, and the commissioner shall report to the Minister, setting forth: (a) The effect of the operation of such ditch or drain upon the effectiveness or operation of any works theretofore authorized under the "Irrigation Act"; (b) the effect of such operation upon irrigation generally, and its future developments; and (c) his own opinion as to the merits of the application.

Plans may be required.—The Minister may, if he deems it advisable, require filing of duplicate plans showing the proposed works and the land to be drained.⁵

(3) *Approval of Minister.*—When such approval has been given by the Minister in writing, such ditch or drain may be constructed and operated under the provisions of the Provincial Act, notwithstanding anything in this Act contained; and no further or other license to use or affect such waters as are used or affected by its construction and operation shall be necessary.

(4) *Rights saved.*—Nothing in this section or in any such approval shall affect any right which has heretofore been acquired under the "Irrigation Act" and is still subsisting.⁶

§ 201. Saskatchewan and Alberta—Regulations for the sale of lands required in connection with any system of irrigation.—In order to encourage settlement and the practice of irrigated farming in southern Alberta and southwestern Saskatchewan where the available annual rainfall seldom exceeds 16 inches, and often falls considerably below that figure, the Government offers to sell its land within a defined tract in the drier portion of this district at the rate of \$3 per acre, under an order approved in Council, dated November 9, 1910, as amended by an order in Council, dated November 25, 1910.¹

1. The sale of lands for reclamation by means of irrigation or in connection with any system of irrigation works shall be confined to lands within the following described territory. (Here follows a description of the land.)

2. Lands within the tract described in paragraph one (1) may

⁵ 7-8 E. VII, c. 38, s. 2 of s. 13, as amended by 9-10 E. VII, c. 34, s. 1.
⁶ 7-8 E. VII, c. 38, s. 13.

¹ In effect by departmental order from 18th of April, 1910.

be sold for irrigation purposes on the following terms and conditions:

(a) No agreement for sale shall be made unless the purchaser shall have received authorization for the construction of works for the irrigation of such proportion of the lands so purchased as may be satisfactory to the Minister of the Interior and in accordance with the conditions set forth in clauses (b) and (c) of these regulations.

(b) The sale of an individual quarter section, or less, may be made on the condition that the area thereof to be irrigated shall be ten acres or over, and provided that such area shall be irrigated by means of an irrigation system which shall not be connected with any other system and the water in which shall not be used upon any other lands.

(c) Sales of areas in excess of one quarter section, or in case it is proposed to irrigate land on more than one quarter section, will be made only upon the condition that at least fifty per cent (50%) of the area sold shall be irrigated.

(d) All sales shall be at the rate of \$3 per acre, payable in six equal, annual installments, the first of which shall become due and payable sixty days from the date upon which the sale is authorized. Interest at five per cent per annum will be charged from the date of the sale.

(e) It shall be a condition of all sales that the irrigation works shall be completed to the satisfaction of the Minister of the Interior and that the lands shown as irrigable shall actually be irrigated for at least one season before letters patent are issued.

(f) Each purchaser will be required to enter into an agreement to acquire, by purchase or otherwise, any lands not owned by the Crown and upon which any of his works are to be constructed, and then to vest such lands in the Crown. A license of occupation will be issued to the purchaser, after the completion of the works and the issue of the water license, granting to him the right to use such lands, as well as other lands owned by the Crown which may be required for this purpose, for so long as his water right remains in effect, such grant being cancellable by the Minister of the Interior upon failure to maintain the irrigation works or any portion of them. The lands to be so acquired and vested in the Crown shall comprise a strip of 30 feet, exclusive of the width of the

ditch, being 20 feet on one side and 10 feet on the other side of said ditch, so as to give access thereto for the purpose of repairs; in the case of works other than ditches sufficient land shall be acquired to give free access to and control of the works.

(g) If any purchaser of land fails to use the irrigation works on such land for the purposes shown in the memorial and plans filed by him in the Department of the Interior and with the Commissioner of Irrigation, within a period of two years from the completion of such works, or if the said purchaser at any time thereafter shall cease to operate the said irrigation works for a continuous period of twelve months, without special leave in writing from the Minister of the Interior to that effect, the ownership of such irrigation works shall revert to the Dominion Government.

(h) If at the end of the period which may be granted for the construction of the irrigation works, such works have not been completed, the agreement to sell the lands may be canceled and any amount paid on account thereof, or works constructed in connection with such irrigation system, may be forfeited to the Crown.

3. All applications for water rights for irrigation purposes must be made to the Commissioner of Irrigation, at Calgary, Alberta, and such applications must be accompanied by a description of the lands applied for in connection with such water rights.

4. All applications for the purchase of lands for irrigation purposes, under these regulations, must be made to the Agent of Dominion Lands for the district in which such lands are situated.

§ 202. **British Columbia—Water Act—Short title.**—During the last few years the Province of British Columbia has not been behind in the enactment of laws governing the rights to the use of water within its jurisdiction. By the Water Act of 1909,¹ entitled, "An Act to declare the rights of the Crown in respect to water and water power and relating to the diversion, acquisition, and use of water," the legislature of British Columbia provided one of the most effective laws governing this subject that can be found in North America. This Act was afterward amended by the Act assented to on February 26, 1912.

As declared by the preamble of the Act its object was as follows: "Whereas, all water in the Province, not under the exclusive juris-

¹ 1909, c. 48.

diction of the Parliament of Canada, remaining unrecorded and unappropriated on the twenty-third day of April, 1892, has already been declared by the legislature of British Columbia to be vested in the Crown in the right of the Province;

“And whereas, in the past, records of the right to divert and use water have been honestly, but imperfectly made, resulting in confusion and litigation;

“And whereas, it is desirable that the rights of existing users under former records should be properly declared;

“And whereas, it is desirable and expedient that the law relating to the acquisition and use of water for all purposes should be amended and consolidated, and the right to acquire and use water should be brought under one uniform system;

“Therefore, His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows.”

Short title.—1. This Act may be cited as the “Water Act.”²

§ 203. British Columbia—Water Act—Interpretation.—Upon the subject of interpretation the following are the most important provisions:

2. In the construction and for the purposes of this Act, including this section (if not inconsistent with the context or subject-matter), the following terms shall have the respective meanings hereinafter assigned to them:

“Minister” means the Minister of Lands, and shall include any person for the time being lawfully acting in that capacity.

“Department” means the Department of Lands of the Provincial Government.

“Water Commissioner” shall include the Chief Water Commissioner, and any Water Commissioner appointed for any one or more water districts, or any person for the time being lawfully acting in that capacity.

“Works” means and includes any and all dikes, dams, weirs, flood-gates, measuring devices, breakwaters, drains, ditches, canals, basins, reservoirs, tunnels, bridges, culverts, cribs, embankments, head-works, flumes, aqueducts, pipes, pumps, and any and all contrivances for holding, carrying, or conducting water, or

other works which are authorized to be constructed under this Act.

“Water” or “stream” shall include all natural water courses or sources of water-supply, whether usually containing water or not, and all rivers, lakes, creeks, springs, ravines, and gulches, and all water-power.

“Duty of water” means the area of land that a unit of water, as regulated by this Act or any lawful authority, will irrigate.

“Acre-foot” means a quantity of water that will cover one acre of land one foot deep.

“License” means a license to use water, or to take and use water, or to store or pen back water, except in Part XI, where it means a license granted under Part XI of this Act.¹

“Licensee” means any municipality, company, partnership, or person who is granted a license in accordance with this Act.

“Domestic purposes” means and shall include household, sanitary, and fire-protection requirements, and the watering of cattle and poultry.

“Municipal purposes” means and shall include the supply of water to any city, town, village, or unincorporated locality for domestic purposes, and within the boundaries of any municipality the supply of water to railways, manufacturers, and others for conversion into steam.

“Rules” means and shall include rules and regulations made by the Lieutenant Governor in Council pursuant to the powers conferred by this Act.²

§ 204. British Columbia—Water Act—Confirming to the Crown the ownership of all waters.—4. *Saving right of riparian owner.*
—Saving the right of every riparian proprietor to the use of water for domestic purposes, the right to the use of the unrecorded water in any stream is hereby declared to be vested in the Crown in the right of the Province; and save in the exercise of any legal right existing at the time of such diversion or appropriation, no person shall divert or appropriate any water except under the provisions of this or some former Act, or except in the exercise

¹ Act of 1909, as amended by the Act of Feb. 26, 1912, s. 3.

² Act of 1909, as amended by the Act of Feb. 26, 1912, s. 3.

of the general right of all persons to use for domestic purposes water to which there is lawful public or private access.¹

5. *No grant of land to vest exclusive right.*—No right to the permanent diversion or to the exclusive use of any water shall be acquired by any riparian owner or by any other person by length of use or otherwise than as the same may have been acquired or conferred under some former Act, or by license under this Act.²

§ 205. **British Columbia—Water Act—The unit of measurement—Water districts and water commissioners.**—6. *Unit of Measurement.*—The discharge of one cubic foot of water per second shall be the unit of measurement of flowing water, and the acre-foot the unit of measurement of quantity.¹

6a. *Unit of quantity.*—Applications for licenses for the diversion of water may state the quantity to be diverted in cubic feet of water per second, in acre-feet per annum, in gallons per day, or in miner's inches.²

7. *Water Divisions.*—It shall be lawful for the Minister to divide the Province, or such parts thereof as may be convenient, into districts, to be called "water districts," and to define the boundaries thereof.³

8. *Water Recorders.*—The Lieutenant Governor in Council may appoint a Comptroller of Water Rights for the Province and Water Recorders for any one or more water districts. The Comptroller of Water Rights shall have all the powers and authorities conferred upon Water Recorders under this Act.⁴

§ 206. **British Columbia—Water Act—The creation of the "Board of Investigation" for the purpose of determining existing rights.**—Of special note is the creation of a tribunal having conferred upon it jurisdictional powers somewhat similar to the Board of Control of Wyoming, for the purpose of determining existing water rights. The said provisions are as follows, to wit:

9. *Creation of board of investigation—Its duties and powers.*—There shall be and there is hereby created a tribunal, to be

1 1909, c. 48, s. 4.

3 1909, c. 48, s. 7.

2 1909, c. 48, s. 5.

4 1909, c. 48, s. 8, as amended by Act of Feb. 26, 1912, s. 2.

1 1909, c. 48, s. 6.

2 1909, c. 48, as amended by Act of Feb. 26, 1912, s. 5.

named the “Board of Investigation” (hereinafter in this part of this Act called “the Board”), for the purpose of hearing the claims of all persons holding or claiming to hold records of water or other water rights under any former public Act or Ordinance, of determining the priorities of the respective claimants, of prescribing the terms (not inconsistent with this Act) upon which new licenses, replacing records under former Acts, to take and use water pursuant to this Act will be granted, and generally of determining all other matters and things in this part of this Act or by the Lieutenant Governor in Council referred to the Board for determination, and discharging such duties with respect to existing rights and claims as may be imposed upon the Board, and with such powers and authorities for that purpose as are in this part of this Act conferred.¹

10. *How Board constituted.*—The Board shall consist of the Comptroller of Water Rights and such other two or more persons as the Lieutenant Governor in Council may for such periods of time and from time to time appoint.²

11. *Quorum.*—Two members of the Board shall form a quorum, and not less than two members shall attend the hearing of any claim.³

12. The Comptroller of Water Rights, or some member of the Board authorized by the Minister, shall preside at all meetings of the Board, and, if the Board shall consist of an even number of persons, shall have a second or casting vote.⁴

13. *Remuneration.*—The remuneration of the members of the Board shall be in the discretion of the Lieutenant Governor in Council.⁵

14. *Oath of office.*—As soon as practicable after the appointment of the members of the Board, they shall severally take the following oath: “I, A. B., swear that I will fulfill and discharge the duties of a Comptroller of Water Rights (or of a member of the Board of Investigation, as the case may be), justly and accord-

¹ 1909, c. 48, s. 9; 1911, c. 59, s. 2, as amended by Act of Feb. 26, 1912, s. 6.

² 1909, c. 48, s. 10; 1911, c. 59, s. 3, as amended by Act of Feb. 26, 1912, s. 2.

³ 1911, c. 59, s. 4.

⁴ 1909, c. 48, s. 11; 1911, c. 59, s. 5, as amended by Act of Feb. 26, 1912, s. 2.

⁵ 1909, c. 48, s. 12.

ing to the statutes and rules governing or prescribing my duties, to the best of my cunning, wit, and power, and that I will take nothing for my office but of the King or fees accustomed. So help me, God." The oath may be administered by any judge of the Supreme or County Court, or by the Comptroller of Water Rights, or member of the Board presiding at any meeting, if he shall have taken the oath, and they shall, as soon as convenient thereafter, meet for the transaction of business.⁶

15. *Lieutenant Governor in Council to appoint assistants.*—The Lieutenant Governor in Council may appoint such other persons (and prescribe their duties) as may be necessary to assist the Board in the discharge of their duties.⁷

§ 207. **British Columbia—Water Act—Powers of Board of Investigation—The determination of existing water rights.**—16. *Board to make rules.*—The Board may from time to time make rules, not inconsistent with this Act or any rules or regulations made by the Lieutenant Governor in Council, for the regulation of business and the maintenance of order when hearing claims and determining rights and adjudicating thereon, and generally for the orderly transaction of their own business or that of others that may be brought before them.¹

19. *Streams to be examined and measurements of water made.*—The Minister may cause to be made on any stream a proper measurement of the low water, high water, and flood discharge, and an examination of all the works constructed for conveying or utilizing water from each stream; and the report of such measurement and examination may be used by the Board when inquiring into and determining rights and claims upon any stream.²

21. *Board may make personal examination and act thereon.*—The Board shall be at liberty to make any personal examination of any stream or part of a stream or any works, and the Board may act upon any such examination in determining rights and claims.³

⁶ 1909, c. 48, s. 13, as amended by Act of Feb. 26, 1912, s. 7.

⁷ 1909, c. 48, s. 14.

¹ 1909, c. 48, s. 15.

² 1909, c. 48, s. 18, as amended by Act of Feb. 26, 1912, s. 9.

³ 1909, c. 48, s. 20.

22. *Notice by advertisement to be given.*—The Board shall, by advertisement in some local newspaper, give one month's notice of their intention to investigate claims to the water of any stream, giving all the names by which the stream has at any time been known, or, if unnamed, a good description thereof, and directing all persons having claims to water on such stream, on or before a certain date, to come in and present their claims as herein provided.⁴

24. *Time and place of hearing—Service of notice.*—The Board shall fix the time and place for hearing claims and determining rights to water on each and every stream, and shall give such notice thereof to the persons who shall appear to the Board to be interested as in their opinion shall be just, but in no case shall the notice be less than thirty clear days. In the event of inability or serious inconvenience to give personal notice, the notice shall be given by letter addressed to the last known residence of the person intended to be served and by advertisement in a local newspaper. In no case, however, shall the sufficiency of the notice be called in question:

(a) *Summary hearing.*—Provided, always, that when holders of water rights request in writing the summary hearing of claims to water rights on a stream, the Board may fix the date of the hearing, and, without advertising, proceed to adjudicate as between such holders after giving ten clear days' notice of the date of the hearing by registered letter mailed to the last known address of each such record holder; (b) and provided further, that the Board may, by consent in writing, without notice, adjudicate at any time between persons whose water rights conflict.⁵

25. *Power to administer oaths, etc.*—The Board or any member thereof may administer oaths, take and receive affidavits, declarations, and affirmations in or concerning any matter or thing in or in anywise concerning any proceeding before them or relative thereto.⁶

26. *Extend time.*—The Board may from time to time by writing, or by such notice as they may deem expedient, extend the time

⁴ 1909, c. 48, s. 22; 1911, c. 59, s. 7, as amended by Act of Feb. 26, 1912, s. 13.
8, as amended by Act of Feb. 26, 1912, s. 11.

⁶ 1909, c. 48, s. 24.

⁵ 1909, c. 48, s. 21; 1911, c. 59, s.

22—Vol. I—Kin. on Irr.

for hearing claims and adjudicating upon rights upon any particular stream, and, when in their opinion the justice of the case shall require, may, upon such terms as shall be deemed just, extend the time for any particular claimant or claimants to present his or their claims before the Board.⁷

27. *Meet and adjourn.*—The Board may meet and adjourn at their absolute discretion. In the absence of the others, any one member of the Board may adjourn a sitting or meeting. In the absence of all members of the Board, the Water Recorder of the district, on instructions from the Board, may adjourn the meeting to such time as he has been instructed by the Board to adjourn it. If no such instructions have been received by the Water Recorder, he shall adjourn the meeting from day to day.⁸

28. *Statement of Claim.*—(1) No particular form shall be necessary to bring on any claim before the Board. It shall be sufficient if the claimant presents a statement of claim in writing, setting out: (a) An exact copy of the record or records claimed; (b) a description of the particular land to which it is claimed the record is appurtenant; (c) a sketch showing the position of the point of diversion and the dams, ditches, and flumes to the claimant's land; (d) the character and brief description of the works; (e) the purpose for which the water has been used; (f) the title to the land held by the grantee at the date of the record, including the date of pre-emption record or permission to purchase from the Crown; (g) the title of the claimant to the land to which the record is appurtenant; (h) the irrigable area of such land; (i) the quantity of water claimed, expressed in miner's inches, cubic feet per second, gallons per day, or acre-feet per annum. (2) Any number of persons claiming under the one record may unite in a statement of claim.⁹

29. *Form not essential in conduct of proceedings.*—No special or particular form shall be necessary in the conduct of proceedings antecedent to the hearing, or before the Board, or in the conduct or management of the Board's business or any part thereof.¹⁰

⁷ 1909, c. 48, s. 25, as amended by Act of Feb. 26, 1912, s. 15.

⁸ 1909, c. 48, s. 26, as amended by Act of Feb. 26, 1912, s. 16.

⁹ 1909, c. 48, s. 27; 1911, c. 59, s. 9, as amended by Act of Feb. 26, 1912, s. 17.

¹⁰ 1909, c. 48, s. 28.

30. *Adjudication.*—The Board may, among other things: (a) Examine the claim presented for their consideration, and hear evidence in support of and in opposition to each claim respectively; (b) determine the priorities of the respective claimants to water out of any particular stream; (c) order the cancellation of the former records; (d) determine the quantity of water to which each claimant is entitled; (e) direct and establish the character of the works to be constructed by each claimant, having due regard to existing storage-works; (f) from time to time give directions and make such orders as they may think necessary for the improvement of any works to prevent waste and insure stability; (g) direct the Comptroller of Water Rights to enter in a book kept for that purpose—(1) the name and postoffice address of the claimant entitled to the water; (2) the priority as determined; (3) the quantity or flow of water to which the claimant is entitled; (4) the name of the stream; (5) the point of diversion; (6) a concise description of the works; (7) the purpose for which the water is to be used; (8) the hereditament or undertaking to which the license shall be appurtenant.¹¹

31. *Issue of licenses.*—The Comptroller of Water Rights shall issue licenses to replace the former records as directed by the Board.¹²

32. *No errors in record to prejudice right to hearing.*—No error or defect in any record shall prejudice the right of any claimant to have his claim heard and determined by the Board, provided there has been a bona fide application for water, and such water has been used for some beneficial purpose.¹³

33. *All claims shall be heard.*—Without restricting the scope of the foregoing sections, the Board shall hear and shall determine upon their merits all rights and claims submitted to them.¹⁴

34. *Holder who does not file a claim.*—In the event of any holder of a record neglecting to present a statement of claim to the Board at the time fixed for the hearing, the Board shall take his rights into consideration, and shall notify him by regis-

¹¹ 1909, c. 48, s. 29, as amended by Act of Feb. 26, 1912, s. 18.

¹² 1909, c. 28, s. 30, as amended by Act of Feb. 26, 1912, s. 19.

¹³ 1909, c. 48, s. 32.

¹⁴ 1909, c. 48, s. 32, as amended by Act of Feb. 26, 1912, s. 20.

tered letter mailed to his last known address of its decision; and if he does not appear before the Board within thirty days after the giving of such notice, such decision shall stand and his former record shall be canceled; if he does appear, he may be granted a rehearing on such terms as shall seem just to the Board.¹⁵

35. *Forfeiture and cancellation on claimant failing to establish his claim.*—In the event of any claimant appearing before the Board and failing to establish his claim, any record held by him shall, without any further notice, demand, or proceedings, be forfeited, and the entry of such record canceled, and his works, if upon Crown lands, shall become forfeited to the Crown, and if not upon Crown lands shall become forfeited to and become the property of the owner of the land upon which the works are situate.¹⁶

36. *No certiorari.*—No writ of certiorari shall be granted to remove any proceeding before the Board save for excess or want of jurisdiction.¹⁷

37. *No prohibition.*—No writ of prohibition shall issue directed to the Board or any member thereof, save for excess or want of jurisdiction.¹⁸

38. *No injunction except on information of Attorney General.*—Except on the information of the Attorney General of the Province, no Provincial Court shall, by injunction or any other process of the Court, restrain or interfere with any claimant seeking to establish his claim before the Board.¹⁹

39. *Board to Keep Record.*—The Board shall keep minutes of their proceedings, including the evidence in support of and in opposition to any claim, and generally of all matters brought before them for adjudication.²⁰

40. *Enforcement of decisions.*—The decision of the Board may, by leave of the Supreme Court or a Judge thereof, be enforced in the same manner as a judgment or order of the Court to the same effect.²¹

15 1909, c. 48, s. 33, as amended by
Act of Feb. 26, 1912, s. 21.

16 1909, c. 48, s. 34.

17 1909, c. 48, s. 35.

18 1909, c. 48, s. 36.

19 1909, c. 48, s. 37.

20 1909, c. 48, s. 38, as amended by
Act of Feb. 26, 1912, s. 22.

21 1909, c. 48, s. 39.

41. *Supreme Court may make orders to assist.*—The Supreme Court or a Judge thereof may, on petition signed and presented by the Board setting out the facts, make any order necessary in the opinion of the Court or a Judge thereof to assist and enable the Board to discharge the duties imposed upon the Board by this Act.²²

42. *Appeal.*—An appeal shall lie to the Court of Appeal from every order or decision of the Board, and the statutes and rules governing appeals from the judgment of a judge of the Supreme Court to the Court of Appeal shall apply to and govern all appeals from the Board to the Court of Appeal.²³

43. *Prior rights acquired.*—(1) The rights, records, powers, privileges, and priorities which have been acquired, had, exercised, and enjoyed by any municipality or power company for the purposes of its undertaking and works shall, so long as the same are used for such purposes, be vested in such municipality or power company, as the case may be. (2) Subject as aforesaid, municipalities and companies holding records of water and whose works have been approved by the Lieutenant Governor in Council, pursuant to the “Water Clauses Consolidation Act,”²⁴ shall, on presentation to the Board of their record and evidence of the approval of their works, and, in the case of a company, of the bona fide exercise of its powers and privileges, be entitled to a license under this Act for the same quantity of water and having the same priority as the record, and shall thereupon have all the rights and privileges conferred by this Act on licensees whose works have been approved by the Lieutenant Governor in Council, and shall also be liable to the obligations imposed by this Act on such licensees. (3) Companies who made application before the twelfth day of March, 1909, to a Judge of the Supreme Court for a certificate under Section 55 of the said “Water Clauses Consolidation Act,” and have obtained such certificate, shall, upon presentation to the Board of their record and of such certificate, be entitled to a license under this Act, and shall thereupon have all the rights and privileges conferred by this Act on licensees whose works have been ap-

²² 1909, c. 48, s. 40.

²³ 1909, c. 48, s. 41.

²⁴ Chapter 190 of the Revised Statutes, 1897.

proved by the Lieutenant Governor in Council, and shall also be liable to the obligations imposed by this Act on such licensees.²⁵

44. *Works not constructed.*—If the holder of a record shall not have constructed the works necessary for a diversion of the water, the Board may fix a time within which to begin, and a further time within which to complete, the construction of such works as the Board shall order; and he shall not be entitled to a license in substitution for his record unless and until such works have been so commenced and completed.²⁶

45. *Proof of completion of works.*—If proof of the completion of the said works is not filed with the Comptroller of Water Rights within one month after the date set by the Board for such completion, the Comptroller of Water Rights shall, without further notice, demand, or proceeding, declare the said record forfeited and the entry of such record canceled; and the works constructed under such record, if upon Crown lands, shall become forfeited to the Crown, and if not upon Crown lands, shall become forfeited to and become the property of the owner of the land upon which the works are situate.²⁷

46. *Power to extend on terms.*—Before the time fixed for the completion of the works as aforesaid, an application to extend the time may be made to the Board, but the Board shall not entertain the application nor have any power to extend the time, unless the applicant shall satisfy the Board, upon oath, that the applicant has begun and diligently continued the work in perfect good faith, and has been prevented by causes beyond his control from completing the works so ordered to be constructed as aforesaid.²⁸

§ 208. **British Columbia—Water Act—Priority of purpose and of right in acquisition of water.**—47. *Acquisition of Water.*—The right to use water may be acquired upon application therefor to the Water Commissioner for a license as hereinafter provided.¹

48. *Protecting riparian owner using water for domestic purposes.*—Every license to take and use water shall be issued with

25 1909, c. 48, s. 42, as amended by Act of Feb. 26, 1912, s. 23.

26 1909, c. 48, s. 43, as amended by Act of Feb. 26, 1912, s. 24.

27 1909, c. 48, s. 44, as amended by Act of Feb. 26, 1912, s. 25.

28 1909, c. 48, s. 45.

1 1909, c. 48, s. 47.

due regard to the requirements of riparian proprietors for domestic purposes.²

49. *Priorities of licenses.*—After the twelfth day of March, 1909, all applications for water shall be subject to the claims and rights as finally settled, and to the licenses issued by the Board under Part III of this Act, and shall have precedence according to the time of the filing in the office of the Water Recorder for the district of a copy of the notices posted on the ground, and the licenses and the privileges thereby granted shall have precedence and priority according to their date.³

50. *Priority of use of water.*—Subject to the provisions of the last preceding section, all licenses to use water shall have issue with due regard to the purpose for which it is required, which shall have priority in the following order: First—Domestic purposes. Second—Municipal purposes, which means and shall include the supply of water by a municipality or by any company to any municipality, city, town, village, or unincorporated locality for domestic purposes. Third—Irrigation of land. Fourth—Industrial purposes, which means and shall include water required for the production of steam and all other purposes save domestic, municipal, irrigation, the production of power for sale, barter, or exchange, and mining. Fifth—Power, which shall include the use of water for generating power for sale, barter, or exchange. Sixth—Mining, which shall include any use of water in connection with mining. Seventh—Clearing streams for driving logs. Eighth—Lowering the level of any standing body of water for the purpose only of reducing the same. Ninth—Utilization of mineral waters.⁴

§ 209. *British Columbia—Water Act—Procedure to obtain water licenses and the general rights acquired by licenses.*—

51. *License for one purpose only.*—No license shall issue for more than one of the purposes mentioned in Section 50 of this Act.¹

52. *No license to sell.*—No license shall issue to any individual

² 1909, c. 48, s. 46.

³ 1911, c. 59, s. 10, as amended by

Act of Feb. 26, 1912, s. 2.

⁴ 1909, c. 48, s. 49; 1911, c. 59, s.

11, as amended by Act of Feb. 26, 1912, s. 26.

¹ 1909, c. 48, s. 50, as amended by

Act of Feb. 26, 1912, s. 27. Further—

or partnership for the sale, barter, or exchange of water, or of power generated from water.

53. *License to sell*.—(1) A municipality or a company may, with the consent of the Lieutenant Governor in Council and upon the approval of their undertaking, as provided in Part VI of this Act, acquire one or more licenses to take and use water for municipal or power purposes, as defined by Section 50 of this Act, or both of such purposes. *License appurtenant to dominant land*.—(2) An owner of land may acquire one or more licenses to take and use water on any one or more hereditaments for domestic, irrigation, industrial, or mining purposes, or any of them. (3) An individual, a partnership, or a company may acquire: *License under Part XI*.—(a) One or more licenses for clearing streams for driving logs under Part XI of this Act; (b) one or more licenses for lowering the level of water; (c) with the consent of the Minister, one or more licenses to take and use, sell, barter, or exchange mineral water. (4) *Licenses for Indians*.—An Indian Agent may acquire, in trust for Indians located on any Indian reserve, one or more licenses to take and use water for domestic, irrigation, or industrial purposes, subject to the provisions of Sections 299, 300, 301, and 302 of this Act. (5) *Storage licenses*.—A licensee or an applicant for a license to take and use water may apply for one or more licenses to store or pen back sufficient unrecorded water to supply the flow or quantity which the licensee or applicant is or may be authorized to take and use.

54. *Posting notice for diversion*.—The applicant for a license to take and use water shall, at conspicuous points in the neighborhood of the point of diversion and of the proposed place of user, post a notice of his intention to apply for such license. The notice need not follow any particular form, but shall contain or describe: (1) *Contents of notice*.—The name and address of the applicant. (2) The Water Recorder's office in which the application will be filed. (3) The name or a clear description of the stream from which the water will be diverted. (4) The quantity of water in acre-feet per annum, cubic feet per second, gallons per day, or miner's inches applied for. (5) The point of diversion.

more, Secs. 51 to 88, inclusive, were also repealed by the Act of Feb. 26, 1912, and substitute sections enacted in lieu thereof, and no further reference will be made in this section thereto.

(6) The purpose for which the water will be used. (7) The premises where the water will be used, or the territory within which the water or the power generated from the water will be sold, bartered, or exchanged. (8) The date when the notice was posted on the ground.

55 *Posting of notice for storage.*—An applicant for a license to store or pen back water or for lowering the level of water shall, at conspicuous places in the neighborhood of the point of diversion or proposed point of diversion and of the proposed place of user, post notice of his intention to apply for such license. The notice need not follow any particular form, but shall contain and describe, where the application is for a license to store or pen back water: (1) *Contents of notice.*—The name and address of the applicant; (2) the Water Recorder’s office where the application will be filed; (3) the name or a clear description of the stream from which the water will be diverted; (4) the capacity of the proposed reservoir, expressed in acre-feet or gallons; (5) the situation of each reservoir site; (6) the purpose for which the water will be used; (7) the premises where the water will be used, or the territory within which the water or the power generated from the water will be sold, bartered, or exchanged; (8) the date when the notice was posted on the ground. And where the application is for a license for lowering the level of water: (1) The name and address of the applicant; (2) the Water Recorder’s office where the application will be filed; (3) the name or a clear description of the body of water the level of which is to be reduced; (4) the date when the notice was posted on the ground.

56. *Consolidation of notices.*—The notices prescribed by the last two preceding sections and the particulars therein required may be combined in one notice.

Sections 57 and 58 provide for the posting of the notices and the publication of the same. The applicant must publish once a week for four weeks in a local newspaper, and if the application is for a commercial license, for two weeks in the Gazette.

59. *Filing application.*—Within ten days after the first appearance of every such notice in the local newspaper, the applicant shall file in the office of the said Water Recorder an application in duplicate pursuant to such notice, and a sketch in dupli-

cate showing approximately the course of the stream and the lands affected. Such sketch need not be drawn to scale.

60. *Contents of application.*—The application shall be on printed forms to be supplied by the Water Recorder, and shall contain and describe: (1) The full name and address of the applicant. (2) A clear description of the stream, with its name or names (if any). (3) The quantity of water, expressed in acre-feet per annum, cubic feet per second, gallons per day, or miner's inches applied for. (4) The point of diversion. (5) The dams, ditches, flumes, pipe, or other conduits. (6) The purposes for which the water will be used. (7) An accurate description of the land or mine where it is proposed to use or lower the water, or of the territory within which the water or power generated from the water will be sold, bartered, or exchanged. (8) A general description of the lands which may be affected by the construction of the proposed works. (9) The area of Provincial Crown land which will be affected by the said works. (10) The area of private lands which will be affected by the said works. (11) The date of the posting of the notice or notices. (12) The date of the first publication of the notice in the local newspaper,* and the name of the newspaper and the place of the publication. (13) The address to which notices to the applicant may be mailed, or such of the said particulars as are applicable to the license applied for. If the newspaper is published more than fifty miles from the Water Recorder's office, item (12) may be omitted. *Contents of storage application.*—If the application is for the storing or penning back of water, it shall contain, in addition: (14) A description of each reservoir site. (15) An estimate of the area of each reservoir when full. (16) The probable length and height of each dam.

61. *Final proofs.*—The applicant shall, within fifty days from the first publication of the notice in the local newspaper, file with the Comptroller of Water Rights: (1) Proof of the posting and publication of the notices, and a printed copy of the notice in the local newspaper. (2) If the application is for a license other than for lowering the level of water, a list of all water records or licenses appurtenant to the hereditaments or held in connection with the undertaking for which the water will be used. (3) If the applicant is a company, proof that the com-

pany is authorized to carry on business in the Province, and of the amount of the company's paid-up capital. (4) If the application is for domestic purposes, a statement of the number of persons and of cattle to be supplied with water. (5) If the application is for municipal purposes, a statement of the area and population of the territory to be supplied. (6) If the application is for irrigation, a statement of the approximate acreage of the irrigable portion of the land to which the license shall be appurtenant. (7) If the application is for industrial, power, or mining purposes, a statement of the place where the water will be returned to a natural channel, and of the difference in altitude between the point of diversion and such point of return. (8) If the application is for water to be used for industrial, mining, or power purposes, such a statement of the particular use to which the water or the power generated is to be put as will show whether the quantity applied for is reasonable. (9) If the application is for water to be used for municipal or power purposes at a future date, a statement of the benefit which will accrue to the public by the granting of the license at the time of the application. (10) If the application is for water to be used for municipal purposes or for supplying water for domestic use in connection with an industry employing over fifty persons, a certificate from the Secretary of the Provincial Board of Health that the water to be diverted is fit for human consumption. (11) If the application is for mining purposes, the number and date of expiration of the applicant's free miner's certificate.

Section 62 provides for the endorsement and filing of water applications and procedure by the Water Recorder.

Section 63 provides that any individual, partnership, company, or municipality whose rights would be injuriously affected by the issue of the license applied for, may within thirty days of the first appearance of the notice, file with the Water Recorder objection, setting forth the grounds of such objection. The Water Recorder shall without delay forward a copy of every such objection filed with him to the Comptroller, who shall consider the objection, and if in his opinion the alleged grounds of complaint are *prima facie* sufficient to warrant inquiry, shall set a day for hearing before himself or the said Water Recorder,

or some person appointed by the Minister. If he does not consider the grounds sufficient he shall so notify the objector.

64. *Hearing by Comptroller of Water Rights and granting of licenses.*—Licenses under this part shall be granted by the Comptroller of Water Rights, who, upon the application for such licenses, shall take into consideration the application, the quantity of unrecorded water in the stream, prior applications still pending, the objections filed, and any material information contained in departmental plans and surveys; and he may: (1) Refuse the application. (2) Take further evidence, and for that purpose summon and examine witnesses upon oath or affirmation. (3) Adjourn the hearing of objections until the applicant has submitted plans of the proposed works. (4) Grant a permit to make surveys upon such terms as he may think fit, and therein determine the time within which the said surveys shall be made, and the plans of the works required for the diversion, carriage, storage, or lowering the level of the water shall be submitted to him for approval, and the time within which the application to the Lieutenant Governor in Council for the approval of the undertaking shall be made under Part VI of this Act. (5) Settle the priority of the application and of any license which may be issued thereunder.

Section 65 provides that under certain circumstances the advertisement may be dispensed with. Riparian rights are disposed of and limited in the following terse provision:

66. *Riparian requirements.*—When considering the requirements of any riparian proprietor for domestic purposes, the Comptroller of Water Rights shall fix the quantity to which he is entitled for those purposes, and when necessary the means of conveyance thereof.

Section 67 provides that in certain circumstances and for good reason the extension of time may be granted for the commencement of the survey and submission of plan.

Section 68 provides that if the surveys are not made or the said plans not submitted, within the time fixed by the permit under Section 64 or any extension granted, that the permit shall become null and void without further notice.

Section 69 provides that the applicant shall, on the issue of such permit, forthwith proceed to have the surveys and plans made of the work.

Section 70 provides that the applicant shall, within the time granted him, file with the Comptroller of Water Rights, and with the Water Recorder of each district in which the works are situated, a statement in writing and plan containing full information relative to the route, position of works, parcel of land crossed, and other information required.

Section 71 provides that if the application is for a non-commercial license the applicant shall serve a notice on each person whose land will be touched or in any way affected by the works. If the application is for a commercial license the applicant shall serve such notice on each person so affected, and shall also publish a notice in the Gazette and in a local newspaper.

Sections 72 and 73 provide for protests and objections on behalf of any one who will be injuriously affected by the issuance of a license and for the hearing thereon before the Comptroller of Water Rights, the Water Recorder or some person appointed by the Minister to take evidence and report.

74. *Issue of license.*—After the approval of the plans and application, the Comptroller of Water Rights shall issue to the applicant a license or licenses under this part, having the precedence therein mentioned.

75. *Licenses for municipal purposes.*—A license for municipal or power purposes for any quantity of water, or a license to a company for industrial purposes when the quantity applied for exceeds ten cubic feet per second, shall not issue, unless and until the undertaking has been approved by the Lieutenant Governor in Council under Part VI of this Act.

76. *Diversion of water.*—The grant of a license to take and use water shall include the right to the licensee to divert the water included in the license at the point of diversion.

77. *Right to the flow.*—The grant of a license to take and use water shall entitle the holder to the flow of the specified quantity of water in the stream at the point of diversion, which right shall not be prejudiced by subsequent grants at higher points on the stream or any tributary thereof.

78. *Subject to adjustment.*—All licenses granted under this part of this Act to take, use, store, or pen back water shall be subject to subsequent adjustment by the Comptroller of Water Rights after a hydrographic survey of the stream has been made. Such adjustment shall, however, where the water is used for irrigation, be made with due regard to the duty of water on the hereditaments watered by the stream, and in all cases without changing the priority of the license.

79. *Storage rights.*—Subject to any obligations hereinafter imposed, the rights and powers herein conferred shall, when mentioned in the license, but not otherwise, include the right or power to store water and to lower lakes and other standing bodies of water below their normal level, and to construct the works authorized and approved in respect thereof.

80. *Mineral water.*—A license to take or use water shall not confer any right to the use or diversion of mineral water unless expressly mentioned in the license.

81. *Change of point of diversion.*—Any holder of a license or record may obtain permission from the Comptroller of Water Rights to change the point of diversion of the water used by him, or the course of his ditch, flume, or other conduit, on giving such notices and complying with such terms as the said Comptroller may require or impose.

Section 82 provides that whenever a licensee or the owner of a segregated portion of land to which a license is appurtenant desires to have the water apportioned between two or more parts thereof, he may apply to the Comptroller of Water Rights, and on its being proved to his satisfaction that the rights of others will not be prejudiced or impaired, the Comptroller, after notice to all persons interested, may amend the license originally granted or may issue two or more licenses to the apportionment permitted.

Section 83 provides for the entry on private lands by any licensee or the holder of a permit for the purpose of surveying the location of the point of diversion, the place of storage, and the route for the carriage of the water as part of the works proposed to be constructed, doing as little damage as possible and fully compensating the owner of said property. Before entering upon the lands the licensee must give a bond for the payment of any loss, damage, or injury to such owner.

84. *May construct works.*—The licensee, subject to and in conformity with this Act and the authority received from the Comptroller of Water Rights, or by the certificate of the Lieutenant Governor in Council, as in the Act prescribed, may construct any works necessary to beneficially use the water referred to in his license.

Section 85 provides for the joint construction of two or more licenses upon such terms as may be agreed upon between them. And any company organized for the purpose of carriage of water held under records or licenses may, upon, but not without, filing their plans in connection with such carriage with, and obtaining the approval thereof by, the Comptroller of Water Rights and obtaining the approval of their undertaking by the Lieutenant Governor in Council, construct such works to carry such waters and may mingle such waters.

86. *License appurtenant to hereditaments.*—Whenever a license is granted for the use of water upon any particular hereditaments, such license shall be deemed to be appurtenant to the hereditaments in respect whereof such license is granted, and shall pass with any demise, devise, conveyance, alienation, or transfer of the said hereditaments.

87. *License evidence.*—The production of the license or of a certified copy of the counterfoil thereof in the Water Recorder's office, without further proof, shall be evidence in all Courts of the matters and things therein mentioned.

88. *Appeal.*—Any person aggrieved by or dissatisfied with any order made by the Comptroller of Water Rights or Water Recorder under this part may appeal therefrom to the Minister in the manner hereinafter prescribed.

§ 210. **British Columbia—Water Act—Approval of the undertaking of municipalities and companies.**—Sections 89 to 99 of the Water Act provide that if under this Act the undertaking of a municipality or company requires the approval of the Lieutenant Governor in Council before the issuance of a license, the applicant may apply for such approval at any time after the filing of its application for license. Such application may be also made by petition; notice of the same must be given in the usual way; objections may be filed against the granting of the application,

and a hearing upon such objections provided. The Lieutenant Governor in Council, after the disposal of such objections, may issue a certificate setting forth that the proposed undertaking has been approved, or has been approved with certain limitations.

94. *Certificate to a company.*—If it be intended to issue such certificate to a company, then in and by such certificate the following matters and things shall be determined and set out therein: (a) The amount of the capital of the company which shall be subscribed and the amount which shall be actually paid up before the company shall begin the construction of the works; or (b) if the work has been divided into parts, then the amount of capital which shall be subscribed and the amount which shall be actually paid up in respect of each part before beginning the works on each particular part; (c) the time within which the works shall be begun, and if divided, then the time within which each part shall be begun; (d) the time within which the works shall be completed and in actual operation; (e) the territory within which the company may exercise its powers.

It is also provided that the Lieutenant Governor in Council may from time to time grant any further certificate or certificates that may be necessary respecting any part of the undertaking or any matter or thing not contained in the first or any former certificate. A copy of the certificate must be filed at the office designated in the Act. Extensions of time for the completion of work may be granted by the Lieutenant Governor in Council upon certain showing and conditions.

98. *Powers conferred.*—Upon the grant of the first or any subsequent certificate by the Lieutenant Governor in Council and the issue of a license, the municipality or company, subject to such certificate or certificates, shall have, hold, and enjoy all the rights, powers, and privileges conferred upon companies licensed to take and use water under this Act.

Section 99 provides that the Minister may cancel a certificate where there has been a default in not having commenced the work within six months or within the extended time, and that there shall be an appeal to the Lieutenant Governor in Council upon the decision of the Minister under this certificate.¹

¹ As amended by Act of Feb. 26, 1912, s. 27.

§ 211. **British Columbia—Water Act—General powers and privileges of municipalities and companies using water for domestic purposes.**—Sections 100 to 107 of the Water Act provide as follows:

100. *Entry on and expropriation of lands.*—Upon the undertaking and works of the municipality or company being approved by the Lieutenant Governor in Council and a certificate of such approval being granted, and a license being issued, the municipality or company may, in the manner hereinafter prescribed and upon the terms and conditions and for the purposes mentioned in the said certificate and license and subject to the obligations hereinafter imposed, enter upon, take, and use Crown lands and other lands howsoever and by whomsoever held.¹

Section 101 provides that the municipality or company may, after the issuance of the license, construct their works upon any lands referred to in the map or plan submitted at the time when the application was made for the approval of the works and, subject to the obligations thereafter imposed, shall, for that purpose, have the right of ingress and egress over such lands and do and perform all such acts and things as may be necessary for the purpose of so constructing their works.²

Section 102 provides the purposes for which expropriation of lands may be made, which are as follows: (a) Maintaining, altering, improving, or repairing their works; (b) opening new streets required for their works; (c) the protection of their works; (d) preserving the purity of the water supplied by them to the inhabitants; (e) providing for efficient distribution of the water to the inhabitants.³

Sections 103 to 117 provide for the conveyance of water to the outer line of the street by the municipality or company and keeping the line in repair; for the laying of service pipes; that the occupier must construct all other works to receive the water; the expenses of laying and repairing pipe must be paid by the owner on demand to the municipality or company; that stop-cocks are

¹ 1909, c. 48, s. 97; as amended by Act of Feb. 26, 1912, s. 28.

³ 1909, c. 48, s. 99, as amended by Act of Feb. 26, 1912, s. 30.

² As amended by Act of Feb. 26, 1912, s. 29.

23—Vol. I—Kin. on Irr.

not to be disturbed save in case of accident, etc.; the providing for taps for the use of the water; that certain persons are authorized to have the right of entry and inspection; that the company or municipality has the power to regulate the distribution and use of the water; that the water rates may be levied by the municipality as taxes and by the company; that they may be considered as debts to be recovered by action in any court of competent jurisdiction, and the municipality or company may further shut off the water from the premises; that the municipality or company may from time to time make and enforce by-laws, rules, and regulations not inconsistent with the Water Act or any rules made thereunder; that the municipality or company shall not be liable for damages caused by the breaking of any service pipes or attachment, except in certain cases; that the municipality or company shall have the power and authority to supply non-residents; the municipality or company may also sell or dispose of any real or personal property acquired by them when no longer required.

§ 212. **British Columbia—Water Act—Special powers and privileges of municipalities using water for domestic purposes.**—Section 118 provides that no license for municipal purposes, as defined by Section 50 of the Water Act, granted to a municipality shall become void or be canceled by reason of non-user in whole or in part. But in so far as the quantity of water licensed to be diverted by a municipality is not required for its present purposes, a license may be granted to others authorizing the use of water subject to and until it is required for municipal purposes.¹

119. *Expropriation of recorded water by municipality.*—In those cases where a sufficient supply of unrecorded water is not available within reasonable limits of distance and expenditure, and save as to water required by any individual for domestic purposes and water acquired by a company already supplying a municipality or unincorporated locality with water for municipal purposes, every municipality may, for municipal purposes only, apply to the Lieutenant Governor in Council for leave to expropriate any water record or water license and the works con-

¹ As amended by Act of Feb. 26, 1912, s. 31.

structed thereunder, and acquire another license in respect thereof.²

Sections 120 to 122 provide that an application to the Lieutenant Governor in Council must be made by petition in the proper form as provided for the expropriation of water as provided for in Section 119. A copy of such petition endorsed with a notice of the time fixed for the hearing must be served upon the existing licensee or holder of the water record and all other persons who are affected by the application. The Lieutenant Governor in Council may, on such application, make such order as may be deemed just and expedient.

Sections 123 to 126 provide that any municipality may for municipal purposes acquire by purchase any water record or license to divert water into works connected therewith; and any municipality may for municipal purposes on giving one year's notice in writing to the company supplying the municipality with water, expropriate such water company's license or record of the works and also so much of the company's land as is used in connection with the works. The value of the works and land of the company shall be ascertained by arbitration under the "Arbitration Act," and shall, with the following additions thereto, be the price paid by the municipality: (a) If the company's works have been in operation less than five years, a 30 per cent bonus upon such value; (b) if in operation five years and less than ten years, a 25 per cent bonus; (c) if in operation ten and less than 15 years, a 20 per cent bonus; (d) if in operation 15 and less than 20 years, a 15 per cent bonus; (e) if in operation 20 years or more, a 10 per cent bonus. In estimating the value of the company's works and land, arbitrators shall take as the basis of the valuation the amount which would be required to construct such works and their condition at the time of the arbitration.

Section 127 provides that whenever the net profits of a company supplying the inhabitants of a municipality with water shall exceed 20 per cent per annum on the paid-up capital of the company, the rate charged by the company for water, on petition of the municipality, may be so reduced that the company shall not pay or be able to pay more than 20 per cent per annum.

Sections 128 to 136 provide that any company supplying the inhabitants of a municipality may be required to make reasonable extensions of the company's works upon the municipality's giving reasonable notice. Upon receipt of such notice the company shall, within 14 days, inform the municipality whether or not it intends to comply therewith. In the event of the company omitting to give such information the omission shall be equivalent to a refusal and may be so treated. In the event of the company refusing or neglecting to comply with the terms of such notice the municipality may by petition apply to the Judge of the Supreme Court to enforce the request contained in such notice. Upon the hearing of such petition the Judge may determine the reasonableness of every matter and thing brought before him and shall make such order therein, consistent with the Water Act, as shall in his opinion be just. Without limiting in any way, the power of the Judge to enforce any order he may make, any such order may be enforced by a Writ of Sequestration. Any order so made by the Judge shall be subject to appeal as if it were a final order in an action.

§ 213. British Columbia—Water Act—Powers and privileges of power companies.—

137. *Entry on Crown lands and expropriation of other lands.*—Any company having obtained the approval of the Lieutenant Governor in Council to the undertaking and works of the company for power purposes, and upon a certificate of such approval being granted, may after the issuance of a license and upon the terms and conditions mentioned in the certificate and license and in the manner hereinafter prescribed and subject to the obligations hereinafter imposed, enter upon, take, and use Crown lands and enter upon and expropriate other lands, howsoever and by whomsoever held.¹

Section 138 provides that after the issuance of said license the company may construct their works in accordance with the plans submitted and for that purpose shall have the right of way over the lands to do and perform all acts and things as may be necessary for the purpose of so constructing their works.²

¹ 1909, c. 48, s. 134, as amended
by Act of Feb. 26, 1912, s. 32.

² As amended by Act of Feb. 26,
1912, s. 33.

Section 139 provides that in addition to the general powers conferred on all licensees, the company may, in conformity with the license obtained and the certificate granted, use and apply water and water power for any of the purposes and in the manner and methods following and shall generally have the powers as specifically set forth in this section for that purpose.

Sections 140 to 151 provide that any municipality and power company are authorized to make and enter into any agreement relating to the construction, maintenance, and operation of the undertaking of the works of the power company. Certain rights are also granted over the highways. Regulations are also provided for the use of tramways. The fittings of the company or apparatus on any premises shall not be subject to distress for rent for the premises where the same may be, nor be taken in execution under any process of law or equity against the person in whose possession the same may be. Power is also given to the servants of the company to enter premises at all reasonable times to make examination and to inspect all electric lines and apparatus belonging to the power company. Power is also given to the directors of such company to make such by-laws as may be necessary. All actions for damages against such power company must be commenced within twelve months after the time when such supposed damage is sustained.

§ 214. British Columbia—Water Act—Municipalities as power companies.—Section 152, as amended, provides:¹ “Whenever a municipality, pursuant to any authority conferred by any Act of the legislature has passed a by-law or by-laws for any of the following purposes”—(a) For purchasing, constructing, operating, and maintaining works for supplying the inhabitants of municipalities with water, electric light, or gas; (b) for acquiring by purchase any existing works or to lease or to maintain, operate, and extend the same, as may seem expedient in the discretion of the council; (c) for purchasing, constructing, operating, maintaining street railways and ferries, etc.—“then such municipality may apply for a license to take and use water pursuant to this Act.”

¹ By Act of Feb. 26, 1912, s. 34.

The Act also provides that the right granted must be upon application to the Lieutenant Governor in Council for the approval of its undertaking. The application must also contain full description of the project or projects and of the properties necessary thereto, as prescribed in the section.

The section also provides that when such municipality has obtained the approval of the Lieutenant Governor in Council of its undertaking and has obtained a license under this Act, the municipality shall: (a) Have all the rights, powers, and privileges of a power company; (b) be subject to all the obligations of a power company; (c) conform to this Act and rules made by its authority in all matters and things in relation to the license and the construction of its works and the exercise of its powers.

§ 215. British Columbia—Water Act—Clearing streams for driving logs.—As the timber industry is one of the foremost in the Province of British Columbia, and the natural streams must be used in order to transport the timber and lumber to market, the Water Act provides specifically how the right of any company to streams for this purpose may be acquired.

153. Application for license to clear stream.—Any person or company desiring to obtain a license permitting them to clear and remove obstacles from any stream or streams for the purpose of making the same fit for rafting and driving logs may apply to the Minister for such license, and shall describe the stream or streams proposed to be cleared and, briefly, the nature and character of and the lands that will be affected by the proposed undertaking and works.¹

Sections 154 to 160 provide that the application to use the streams for the above purposes shall be by petition, addressed to the Minister, and shall be in conformity with any rules on the subject, and be accompanied by a sketch, map, or plan, showing approximately the nature, character, and extent of the proposed undertaking and works, and shall also state the terms and conditions upon which it is proposed the license shall be granted. The powers of the Minister are defined to be such that he may grant a permit to make surveys; refuse the application in his

¹ 1909, c. 48, s. 151.

discretion; limit the time within which the power conferred by the permit may be exercised; make any order with respect to the application that in his opinion the public interest may require, and shall require the applicant to furnish security for compensating any person for any loss, damage, or injury that may be sustained by reason of any entry upon the lands of private owners.² The powers of the provisional licensee are also provided for, in that he may enter into Crown and other lands for the purpose of making surveys.³ After surveys the licensee must make maps and plans.⁴ The applicant shall also cause to be made a map or plan of the improvements of the works proposed to be made, and the said maps and plans which conform to any rules upon the subject; and, further, shall give in detail a full description of the particulars of the undertaking, as set forth in the section.⁵ All maps and plans and the particulars mentioned above must be delivered to the Minister. Upon the Minister being satisfied that the maps, plans, and particulars contain the necessary or required information, he shall submit the same to the Lieutenant Governor in Council for consideration.

161. *Application for final license.*—The application for a final license shall be by petition to the Lieutenant Governor in Council, setting out the matters aforesaid, and shall conform to any rules on the subject.⁶

Sections 162 to 164 provide that on presentation of the petition, the Lieutenant Governor in Council may appoint an engineer to examine and make a report on the proposed undertaking and works, and require the petitioner to give security for all costs and expenses in connection therewith. The notice of intention to apply for a final license must be advertised in accordance with the Act.⁷ The applicant shall also, at least 30 days before applying to the Lieutenant Governor in Council, address a registered letter containing a like notice to every person, any part

² Sec. 155, as amended by Act of Feb. 26, 1912, s. 35.

³ Sec. 156, as amended by Act of Feb. 26, 1912, s. 36.

⁴ Secs. 157, 158, as amended by Act of Feb. 26, 1912, s. 37.

⁵ Sec. 163, as amended by Act of Feb. 26, 1912, s. 38.

⁶ 1909, c. 48, s. 159.

⁷ Sec. 163, as amended by Act of Feb. 26, 1912, ss. 38 and 39.

of whose lands are likely to be affected by the proposed undertaking.⁸

165. *Lieutenant Governor in Council may consider certain matters.*—Upon the hearing of the petition, the Lieutenant Governor in Council may consider the probable effect not only upon the rights already acquired with respect to the use of water from the stream or streams for any purpose, but also the probable effect the proposed undertaking and works may have upon the possible use of the stream or streams for any of the purposes mentioned in Part IV of this Act, and shall have due regard to the priority in that part established, and may make any order or give any direction at the cost of the applicant for the purpose of obtaining information before finally acting upon the petition. And he may further direct that notice of the petition be served on any other person whom it may be deemed desirable to serve; adjourn the hearing from time to time; refuse the petition; alter or modify the proposed undertaking and works; approve the undertaking and works; grant a final license upon such terms and conditions as he may deem expedient; generally make any order in the premises that may be expedient.

Sections 166 to 170 provide that final licenses are to contain certain particulars, as stated; the licensee is to give security as the Lieutenant Governor in Council may require for the payment of all such sums as may be awarded by way of compensation to owners of private property for any damage or injury done to the same. When making entry on private property the licensee shall do as little damage as possible and shall make full compensation for any loss, damage, or injury done. If the amount of compensation can not be agreed upon, then it shall be settled by arbitration, pursuant to the "Arbitration Act." The Lieutenant Governor in Council may extend the time of any hearing or proceeding in this section.

171. *Powers of licensee.*—When the licensee has received a final license as aforesaid, he shall, upon the terms and conditions and for the time therein specified, have power: (a) To remove any obstruction from the stream referred to in the license; (b) to construct any apron, dam, slide, gate, lock, boom, or

⁸ Sec. 164, as amended by Act of Feb. 26, 1912, s. 39.

other works therein necessary to facilitate the floating and transmitting of logs, rafts, and crafts; and, also, (c) in the manner hereinafter prescribed, to take and use any lands which may be necessary for the construction of the said works. These powers shall be subject to the prior rights of record holders under former Acts, and licenses under other parts of this Act to the uninterrupted flow of so much of the water of such stream as is required for actual beneficial use under such records or licenses.⁹

Sections 172 to 184 provide for the penning or holding back of water. And it is provided, "If as a result of the construction of any works by a licensee under this part of this Act any water power is created, the licensee shall not, by reason of such construction only, have any right, title, or claim to use the power so created."¹⁰ It is also provided that water must not be released without notice to all persons whose property is liable to injury from the releasing of such water. All works must be kept in repair. The licensee is liable for all injury caused by failure to repair and defective construction. But it is provided that there is no liability if the works are constructed in accordance with the plans and specifications or from the accidental destruction or injury of the works. Licensees may consolidate their rights and an assignment of authority be made to improve their works, subject to the approval of the Lieutenant Governor in Council. Before the issuance of the license the licensee shall pay to the Minister on the first day of June the sum of \$100, and annually thereafter, during the continuance of the license, shall pay the sum of \$25;¹¹ also existing rights are to be governed by the Act as far as payments are concerned.¹² Existing rights not used may be revoked by the Lieutenant Governor in Council. Such persons, granted the rights above named, shall also have the right to use the banks of rivers and natural streams.

Sections 185 to 197 provide that when any licensee improves a stream in accordance with his plans and specifications he is

⁹ Sec. 171, as amended by Act of Feb. 26, 1912, s. 40.

¹⁰ 1909, c. 48, s. 171.

¹¹ Sec. 180, as amended by Act of Feb. 26, 1912, s. 41.

¹² Sec. 181, as amended by Act of Feb. 26, 1912, s. 42.

given the power to collect tolls from others who use such stream for the floating of saw-logs, timber, or other crafts down the same. The amount of the toll shall be graded upon the measurement of the timber so floated. In case of dispute, it is provided that the County Court Judge may fix the rate of the toll which may be collected. Such toll may be collected by an action at law. And if the timber has not come through or over the whole of the works, the licensee can only collect a proportional toll. The tariff fixed by the County Court Judge shall remain in operation unless notice is given. Appeal from the judge's order fixing toll or changing the same may be made to the Court of Appeal. If the rates are not settled, the licensee has a lien on logs, etc., which are floated through such works for the tolls. A warrant may be issued for the seizure of the same and the logs may be sold. All rules and regulations made by the licensee relative to operation must be approved by the Lieutenant Governor in Council. The penalty is fixed for the obstruction of any of the servants of the licensee in the sum of not less than one dollar, and not more than \$10, and all costs.

§ 216. **British Columbia—Water Act—Storing water.**—The subject of reservoir rights and the storing of water are prescribed fully in the Water Act.

198. *Licensee having right to store water.*—Any licensee whose license includes the right to store water, and whose works have been approved pursuant to this Act, may proceed with the construction of the works necessary for such storage purposes and, pursuant to the rules in that behalf, the acquisition of the land required.¹

Sections 199 to 206 provide that the right to store water shall be subject to prior rights to its uninterrupted flow for domestic purposes. "Any person affected or prejudiced by an unlawful storage or penning back of water may apply to the Water Recorder to restrain or regulate such storage or penning back."² Upon such application the Water Recorder shall promptly issue notice to the licensee, which notice shall state the time and place

¹ 1909, c. 48, s. 196; Sec. 198, as amended by Act of Feb. 26, 1912, s. 43. ² Sec. 200, as amended by Sec. 44 of the Act of Feb. 26, 1912.

of the proposed inquiry. A speedy inquiry into the matter must be had. Any person objecting to the penning back shall serve such objections on all parties mentioned by him to the Water Recorder, as probably prejudiced by the same. Personal service must be had in all cases where possible. The duty and the powers of the Water Recorder are fixed in regard to such a hearing. The Minister may appoint some other person to discharge the duties of the Recorder.

Sections 207 to 212 provide: “207. *Licensee may turn water into stream and retake it.*—Any licensee having obtained permission to store water may turn, divert, and deliver water so stored by him into the natural channel of any stream, and, subject to a deduction for seepage and evaporation, may at any point or points take from the same, or any other stream into which the stored water flows, the quantity of water so turned into such natural channel as aforesaid.³ Notice must be given of the intent to turn the water down the stream. The water must be measured where turned in and taken out. The Water Recorder shall, when required so to do, make an examination of the stream and works for the purpose of determining the deduction to be made for seepage and evaporation, and after such examination shall determine the deduction to be made.”⁴ Certain powers are granted the Water Recorder in determining the seepage. He must fix a time within which any particular deduction for seepage and evaporation shall continue.

Sections 213 to 218 provide that when two or more licensees have acquired the right to store water and they can not agree as to the share of the cost of construction, then the matters in dispute shall be determined by arbitration pursuant to the “Arbitration Act.” Any licensee may before entering upon such arbitration abandon his right to store water, but if the licensee abandons his right after the awarding is made, he is liable to all costs. Increased storage is provided for; also the distribution of stored water.

219. *No appeal.*—No appeal shall lie from any order made by a Water Recorder under this part of this Act.

219a. *Lowering of water.*—The provisions of Sections 200 to 206 (both inclusive) of this Act shall apply *mutatis mutandis* to

³ 1909, c. 48, s. 205.

⁴ 1909, c. 48, s. 208.

the lowering of the level of water under a license for that purpose issued under this Act.⁵

§ 217. British Columbia—Water Act—The taking and using of lands.—The taking and using of public and private lands is provided for as follows: Section 220 provides that the word “works” shall include not only the meaning given to it in the interpretation clause, but also all the things which may be done or constructed by power companies.*

221. Terms of entry on Crown lands.—No licensee shall take possession of, use, or occupy any Crown lands or fell timber thereon, except in conformity with this Act and rules, unless the works have been approved under this Act, and the conditions of such entry, use, occupation, and felling of timber have been settled and defined, and have been approved of by the Lieutenant Governor in Council.¹

Section 222 provides that any licensee may, pursuant to this Act and rules, or with the approval of the Lieutenant Governor in Council as aforesaid, enter upon, take, use, and occupy so much of the lands of the Crown as may be necessary for the licensee’s works.²

223. Alienation.—No licensee shall alienate lands so taken, used, or occupied, save in connection with the undertaking and works.³

224. Limits entry on private lands.—No entry shall be made on the lands of private owners if the works can be reasonably constructed upon Crown lands without such entry.⁴

225. Power to take lands.—Any licensee may enter upon, take, use, and occupy so much of the lands of others without their consent as may be necessary for the construction, maintenance, and operation of the licensee’s works in, upon, over, through, or under such lands, and no more.⁵

Sections 226 to 250 provide that before entering upon any lands other than Crown lands, intended to be taken and used or for the purpose of felling timber, the licensee shall file in the Land Reg-

⁵ 1909, c. 48, s. 217; Sec. 219a, as added by s. 45 of the Act of Feb. 26, 1912.

¹ Sec. 221, as amended by Act of Feb. 26, 1912, s. 46.

2 1909, c. 48, s. 220.

3 1909, c. 48, s. 221.

4 1909, c. 48, s. 222.

5 1909, c. 48, s. 223.

ister Office of the district a map or plan of the lands intended to be entered upon. Notice of the same must be served upon the land owner, and also notice of the amount of the compensation proposed to be given and adequate security for such compensation. The date to which compensation shall be paid must be ascertained. The owner of the land must either refuse or accept the compensation. If the owner is absent, application may be granted by a Judge of the Supreme Court, giving leave for substituted notice. If the proposed compensation is accepted the licensee may enter the land at once and use the lands mentioned in the map or plan accompanying the said notice for the said purposes mentioned. In event of the owner not agreeing on the compensation the amount shall be settled by arbitration, under and pursuant to the “Arbitration Act.” Provisions are made for the costs of such arbitration. The licensee may pay the compensation to the Supreme Court, notice of which must be served and published. All owners of lands or interests therein are given the power or may be given the power by the Court, to convey their interests to the licensee. The licensee shall not be responsible for the disposition of any purchase money for lands taken by the licensee for its purposes if paid to the owner of the land or into court for his benefit.

§ 218. British Columbia—Water Act—The obligations, duties, and limitations imposed upon Licensees.—

251. *No obstruction without authority.*—Without lawful authority no licensee shall obstruct any navigable stream.¹

252. *License for beneficial use.*—Every license issued under this Act shall be for the beneficial use of the quantity of water permitted to be taken and used, and notwithstanding the quantity of water granted by any license, no licensee shall, to the prejudice of others, divert more water from any stream than can for the time being be by him beneficially used, and the exclusive right of the licensee shall be limited to the quantity of water his works will carry.²

Sections 253 to 256 provide that when water is not beneficially used by any licensee any person, on application to the Comptroller

¹ 1909, c. 48, s. 249.

² 1909, c. 48, s. 250.

of Water Rights, and upon showing to the satisfaction of said officer that any licensee is not beneficially using or is using a quantity in excess of his requirements, may obtain a license to take and use so much thereof as in the opinion of the Comptroller may be just to all parties. The decision of the Comptroller shall be subject to appeal to the Minister under the rules prescribed.³ The license thus granted shall not have the same precedent as the license in default, and shall be subject, if the nonuse is or has been of temporary character, to the resumption by the original licensees of the rights granted by the original license when the water can be beneficially used.⁴ If the powers granted by any license shall not be exercised for three years, they shall *ipso facto* become null and void. The Comptroller may, however, on application, renew such rights, giving it the original or any priority he may deem just.⁵ Upon any such application there must be taken into consideration any intervening rights acquired by others.⁶

257. *License subject to cancellation for waste.*—Every license shall be subject to cancellation for waste or for nonuser of the privilege granted, or noncompliance with the terms and conditions of the license or certificate of the Lieutenant Governor in Council, save where such nonuser or noncompliance has arisen from circumstances that were accidental, unavoidable, or not wholly within the control of the licensee. The Minister alone shall, upon notice to the licensee, have the power of cancellation pursuant to this section, subject to an appeal to the Lieutenant Governor in Council.⁷

Sections 258 to 267 provide all orders given by the Lieutenant Governor in Council, the Minister, or the Board shall be promptly obeyed. Every licensee shall at his own expense construct and maintain culverts for the passage of waste and superfluous water flowing from any works constructed by him. It is made the duty of every municipality or company holding a license for the use of

³ Sec. 253, as amended by ss. 2 and 47 of the Act of Feb. 26, 1912.

⁴ Sec. 254, as amended by s. 48 of the Act of Feb. 26, 1912.

⁵ Sec. 255, as amended by s. 2 of the Act of Feb. 26, 1912.

⁶ Sec. 256, as amended by s. 2 of the Act of Feb. 26, 1912.

⁷ 1909, c. 48, s. 255, as amended by Act of Feb. 26, 1912, s. 49.

municipalities to prevent and extinguish fire. Works of others must not be injured; and in case of injury, compensation must be made. The roads and highways must be protected; and any damage to the same must be made good. All rights are subject to the “Health Act.” The duty of water may be determined by the Water Recorder.⁸

268. *May order repairs.*—Notwithstanding the approval of the licensee’s works, the Water Recorder shall have power from time to time and at all times to order reasonable repairs, alterations, and improvements in the works to prevent any extraordinary loss by seepage.⁹

Section 269 provides that appeal in any manner hereinafter prescribed shall lie from any order made by the Water Recorder under the last two preceding sections to the Minister and from him to the Lieutenant Governor in Council.¹⁰

§ 219. British Columbia—Water Act—Respecting highways and other ways.—Sections 270 to 274 provide that all lands, highways, streets, and ways disturbed by any licensee in any manner howsoever shall be restored by such licensee to their original condition as speedily as possible. All works on highways shall be subject to the permission of and be constructed under the supervision and control of the Minister. Where such works are proposed to be constructed within the boundaries of any municipality the permission of the Council shall be first had and obtained, and the construction of the works and their use thereafter shall be subject to such regulations, modifications, changes, matters, and things, as the Council may by by-law determine. The Minister may also authorize the interference with existing ditches for such period and upon such terms as he shall direct and impose. Nothing shall be constructed to limit the right of the Minister to lay out from time to time the public roads of the Province across, through, along, or under any ditch without compensation provided that as little damage as possible shall be done.

§ 220. British Columbia—Water Act—Power companies.—Section 275 defines the special obligations of power companies to

⁸ Sec. 267, as amended by Act of Feb. 26, 1912, s. 2.

⁹ 1909, c. 48, s. 266, as amended by Act of Feb. 26, 1912, s. 50.

¹⁰ Sec. 269, as amended by s. 2.

the effect that they shall not interfere with the public right of traveling on roads or highways; shall not obstruct the free access to any building; shall not affix any wire less than twenty feet above the surface of the ground; shall not erect more than one line of poles along any road or street; shall be responsible for all damages which its agents, servants, or workmen cause to individuals or property in carrying out or maintaining any of its undertakings and works.

Sections 276 to 280 provide that no exclusive right shall be given to any company in any canyon and any other company proposing to run a tramway line which would pass through the same pass or canyon, shall be entitled to run their engines, cars, trucks, or other vehicles over the first mentioned line of tramway through such pass and canyon. Just compensation must be made for this right; and in case the parties interested therein can not agree to the amount to be paid, such amount shall be ascertained by arbitration, pursuant to the "Arbitration Act." All by-laws fixing rates must be submitted to the Lieutenant Governor in Council for approval, who may approve, or disapprove of the same, in whole or in part, and may adjust increase or decrease of such tolls, rates, or charges as may be deemed expedient in the public interest. The tariff of rates as approved must be published. All broken roads or highways must be reinstated by the company.

281. *Water to be returned.*—All water lawfully diverted from a stream and not consumed shall be returned, except where natural circumstances render it impossible, to the same stream unpolluted and undefiled.¹

Sections 282 and 283 provide that any power company having a surplus of water, water power, or power procured or generated therefrom as aforesaid not used or sold, shall, upon the payment or tender thereto of the amount of charges or tolls legally chargeable, in respect thereof convey and deliver to any person or company desiring to use same, such surplus of water, water power, or power procured or generated therefrom, or such reasonable part thereof as may be required, and shall continue to so convey and deliver the same as long as the said surplus exists, and the said payment or tender be made. Any company or person desiring to exercise this right must procure and furnish all necessary means

¹ 1909, c. 48, s. 279, as amended by Act of Feb. 26, 1912, s. 51.

of conveyance and all necessary appliances for the taking and using of such surplus water or water power.

§ 221. **British Columbia—Water Act—Limitations of power to purchase.**—Section 284 provides that no undertaking or works of any municipality and no record, license, or privilege appurtenant thereto shall be taken or purchased by any other municipality or by any company under the Act, except, “(a) with the consent of the municipality owning such undertaking or work; or (b) under authority of an order in Council made by the Lieutenant Governor in Council upon its being made to appear that such taking or purchase is necessary or expedient in the public interest.”¹

285. *No other works to be expropriated, save as herein provided.*—No record or license for municipal or power purposes shall be assigned or transferred except under authority of an order in Council made by the Lieutenant Governor in Council upon application made for that purpose, and upon its being made to appear upon such application that such purchase is necessary or expedient in the public interest.²

Section 286 provides that in the event of compulsory purchase of any undertaking or works under the authority made by the Lieutenant Governor in Council, the purchasing company or municipality shall pay to the municipality or company from which such compulsory purchase is made, the cost of construction and a sum sufficient to make up the interest on the capital invested in cost of construction and maintenance to the amount of 15 per cent per annum to the date of purchase, after taking into account any profit that may have been made up to that time, and a further sum equal to a bonus of 30 per cent on the capital actually invested. Provisions are made as to how the amounts shall be computed.

§ 222. **British Columbia—Water Act—Respecting free miners.**—287. *Absolute right of free miners to certain quantity of water.*—Where one or more licensees have been authorized to divert all the water from any stream for mining purposes, and

¹ 1909, c. 48, s. 282.

22, as amended by Act of Feb. 26,

² 1909, c. 48, s. 283; 1911, c. 59, s. 1912, s. 52.

24—Vol. I—Kin. on Irr.

placer mines have at any time been properly located, and, *bona fide*, worked either above or below the point of diversion, the owners of such placer mines shall be entitled, if the quantity of water diverted by the said licensee or licensees does not exceed five and sixty hundredths cubic feet per second, to the continuous flow in the stream past or to divert water into, upon, or through such mine or mines one and sixty-eight hundredths cubic feet of water per second. If the licensee or licensees be diverting eight and forty hundredths cubic feet per second, then the said miners shall be entitled to the continuous flow or diversion as aforesaid of two and fifty-two hundredths cubic feet per second. The flow of water in this section provided for shall be for such distance above and below the said placer mines as is necessary for the continuous and economical working of the said placer mines, and carrying away of tailings and debris arising therefrom.¹

Section 288 provides that the miners or occupiers of any mine traversed by a tramway or power company may lay down upon their own land or mine any collateral branches of tramway to connect with the power company's tramway for the purpose of bringing trains to or from such company's tramway to the property of the miners.

§ 223. British Columbia—Water Act—Inspection of works.—Sections 288a to 288g, as added by the Act of February 26, 1912,¹ provide as follows: That in addition to all the other powers conferred upon him by the Act the Minister may: “(a) At the request of any person residing on or owning land in the neighborhood of any works, whether constructed under this or any former Act, or otherwise howsoever; or (b) if the Minister deems it expedient in the public interest—direct that such works be inspected by an engineer, and may appoint an engineer to make such inspection.” The Minister may require the person making the request for such inspection to make a deposit of such sum of money as the Minister thinks necessary to pay the expenses of inspection. If the inspection is directed, the engineer so appointed shall have the right to and shall make such inspection and shall report to the Minister

¹ 1909, c. 48, s. 285.

¹ Secs. 288a-288g, added by s. 53 of the Act of Feb. 26, 1912.

the condition, security, and stability of said works. In case the request appears to the Minister not to have been justified, he may cause the whole or part of the expenses to be paid out of the deposit made by the person requesting the inspection. However, if the complaint appears to the Minister to have been justified, he may order the holder of the license granted in respect to such works or the owner of said works to pay the whole or any part of such inspection. If the engineer reports that said works have not been constructed in accordance with the terms and conditions of any certificate in respect thereof or that an addition to or alteration in the works is required to insure the stability thereof, the Minister may by notice in writing to the owner, direct that such certificate be complied with or that such addition or alteration be made and may in such notice fix the time for complying with such certificate or making the addition or alteration.

288g. *Compliance with order—Cancellation of license.*—If the directions of the Minister contained in said notice are not complied with within the time so fixed, the Minister shall forthwith issue a certificate to that effect, reciting the facts, and thereupon the Lieutenant Governor in Council may cancel the said record or license.

§ 224. **British Columbia—Water Act—Settlement of Disputes.**—Section 289a as added to the Water Act by the Act of February 26, 1912,¹ provides that any licensee or riparian proprietor aggrieved or prejudiced by the illegal, the excessive diversion, or the waste of water, or by the noncompliance by a licensee with the terms and conditions of the license or the certificate of the Lieutenant Governor in Council, or the approval of the works granted under this or under some former Act, may apply to the Water Recorder to restrain or regulate such diversion or for an order that the licensee or record holder comply with the terms and conditions of said license or record. Upon any such application, the Water Recorder shall forthwith issue notice directed to the person whose acts are objected to and in the Act called the defendant, requiring him within not less than two days after the service of notice to show cause why he should not be restrained wholly or partially from such illegal or excessive diversion or waste. The

¹ Sec. 289a, as added by s. 55 of the Act of Feb. 26, 1912.

notice shall state the time and place of the proposed inquiry. The Water Recorder may also direct notice to be served upon any person who in his opinion is likely to be affected by the application. The time fixed by the Water Recorder for making the inquiry shall be as soon after the application as is reasonably convenient. The complainant shall cause the notices to be personally served upon the defendant. Where personal service can not be speedily effected, substituted service may be had.

The powers of the Water Recorder are defined as follows: "The Water Recorder upon an application as aforesaid, may exercise any of the following powers: (a) Make, either before or at the hearing, a personal examination of the stream and of the works, of any or all parties interested, and may act upon such examination and the information derived therefrom in order to arrive at a just conclusion; (b) may appoint a disinterested person, being a civil engineer, to examine the stream and works of any or all parties interested, and may act upon the report of such engineer; (c) require any person to attend and give evidence before him; (d) administer an oath to any person intending or compelled to give evidence; (e) adjourn the hearing from time to time as may be necessary; (f) extend the time fixed for hearing any application or the performance or any matter or thing directed to be done; (g) make an order wholly or partially restraining or regulating the diversion or waste of water or determining the quantity to be diverted, or that the licensee or record holder do comply with the terms and conditions of the said license, record, or certificate; (h) may recommend to the Minister that the license or record and certificate be canceled; (i) pending the hearing, may make any order in connection with the matter that to him may seem just. (7) Any person aggrieved by or dissatisfied with any order made by a Water Recorder under this section may appeal therefrom to the Minister in manner provided by Section 322 of this Act."

§ 225. British Columbia—Water Act—Miscellaneous rights—In general.—

289. *Water Recorder to control distribution of water.*—The Water Recorder shall, in the district or districts for which he may be appointed, have immediate direction and control of the

diversion, storage, and distribution of the water, and shall have such powers not inconsistent with this Act as are conferred by this Act and rules, and discharge such duties as are imposed upon him by this Act or rules.¹

Sections 290 and 291 provide for the power of the Board or Water Recorder to compel the attendance of witnesses, and they or he shall for that purpose have all the powers and jurisdiction of the justice of the peace under the “Summary Convictions Act.” Any riparian proprietor, pre-emptor, homesteader, and lessee from the Crown may without making the Crown a party maintain an action and take any proceeding in any court of competent jurisdiction to prevent any unlawful or wrongful diversion of the water.

Sections 292 to 295 provide as follows: 292. *Water for irrigation purposes*.—Licenses and records to use water for irrigation purposes and the works connected and used with such licenses and records, may, when the place where the water is used is situated wholly within the boundaries of any municipality, be acquired by such municipality with the consent of the licensee for such consideration and upon such terms as may be mutually agreed upon.² Section 292a provides that a municipality which has acquired licenses under the above provisions may surrender the licenses so acquired and obtain from the Comptroller of Water Rights, in substitution therefor, license of the same priority and for the same quantity of water, extending the use of the water to any point of the municipality.³ Such municipality in arranging the terms of purchase with the licensee may assume any obligations of such licensee with respect to the distribution of the water. Before acquiring any rights and assuming any obligations under the above provisions the municipality shall submit a by-law to authorize the borrowing of money; after the passing of the by-law authorizing the purchase of water right referred to and the completion of the purchase, the municipality shall fulfill all obligations whatsoever of the licensee whose rights have been purchased, control and regulate the distribution of water, and, subject to the rules, fix the price thereof.

1 1909, c. 48, s. 287, as amended by Act of Feb. 26, 1912, ss. 2 and 54.

2 1909, c. 48, s. 290; 1910, c. 52, s. 8.

3 Sec. 292a, as added by s. 56 of the Act of Feb. 26, 1912.

§ 226. **British Columbia—Water Act—Abandonment of rights.**
 —296. *Licensee may abandon. But not to prejudice of mortgagee.*—Any licensee or record holder may, by notice in writing to the Water Recorder, abandon the whole or any part capable of separation of the rights, powers, and privileges acquired. Provided, however, that where any hereditaments to which a record of or a license to take and use water is appurtenant are mortgaged or charged, no abandonment of such record or license and rights shall be effective without the consent of the mortgagee or chargee.¹

297. *Entry of abandonment.*—In the book kept for the purpose of recording licenses and opposite to, across, or in the margin where such original entry is made, the Water Recorder shall record the fact of such abandonment, and shall carefully file the notice of abandonment for reference.²

298. *Mine or land abandoned, water rights void.*—Whenever a mine shall be worked out or abandoned, or a pre-emption record of land shall be abandoned or canceled, or whenever the occasion for the use of water upon such mine or pre-emption shall have permanently ceased, any record of or license to use water in respect of such mine or pre-emption shall be void, and shall be canceled in the book of records or the register of licenses accordingly.³

§ 227. **British Columbia—Water Act—Indian rights.**—

299. *Procedure to obtain license for Indians.*—The Minister, with the approval of the Lieutenant Governor in Council, may, upon such terms and conditions as to compensation to persons affected as the Minister may think proper to impose, authorize the issuance of a license to any Indian Agent as trustee for the benefit of all or any of the Indians located on any Indian reserve of so much of any unrecorded water from any stream as may be reasonably necessary for domestic and irrigation purposes upon such reserve. (a) No license shall be issued under this section unless and until (1) the provisions of this Act as to applications to take, use, or store water have been satisfied; (3) the Indian Agent has

¹ 1909, c. 48, s. 295, as amended
 by Act of Feb. 26, 1912, s. 2.

§ 1909, c. 48, s. 297, as amended by
 Act of Feb. 26, 1912, s. 57.

² 1909, c. 48, s. 296, as amended by
 Act of Feb. 26, 1912, s. 2.

served upon or forwarded by registered letter to each person who may be affected by the proposed diversion, a copy of such notice; (4) the Water Commissioner has reported thereon in writing to the Minister as to the volume of water in the stream from which the water is proposed to be taken; the damage from such diversion to the land owners and that amount of water asked for is necessary and reasonable.¹

Sections 300 to 302 provide that the Minister may, with approval of the Lieutenant Governor in Council, alter, vary, or cancel any license issued under the last preceding section upon such terms and conditions as he may deem proper.² No license under the above provisions shall be granted unless and until the Minister has been satisfied that the terms and conditions as to notice have been complied with and compensation, if ordered, has been paid.³ All questions connected with the diversion of water under Section 299 above, compensation for damages, and quantity of water required shall be decided in a summary manner by the Minister.

§ 228. British Columbia—Water Act—Naming streams—Securities.—Sections 303 to 305 provide that the Comptroller of Water Rights shall give each stream, whether already named or not, or whether known by one or more names, an official name, and such stream shall thereafter be known by that name and no other, and shall be so described and known in all maps and plans and all official documents whatsoever. In the naming of streams some regard must be had to existing maps and names.¹

Save where in the Act it is otherwise provided, the security to be given, before entry upon the lands of private owners for the purpose of surveying only, shall be to the satisfaction of the Minister. Every security required by the Act shall be by bond in double the amount of security required, and shall be given to the Attorney General of the Province, who may, if and when it becomes necessary, assign it to any person or persons injured or claiming to be injured by the obligor, or sue on it himself, as he may deem expedient.

¹ Sec. 299, as amended by s. 58 of the Act of Feb. 26, 1912.

² Sec. 300, as amended by s. 59 of the Act of Feb. 26, 1912.

³ Sec. 301, as amended by s. 60 of the Act of Feb. 26, 1912.

¹ Secs. 303-305, as amended by s. 2 of the Act of Feb. 26, 1912.

§ 229. **British Columbia—Water Act—Rents and royalties.**—Sections 308 to 315 provide: “308. *Lieutenant Governor in Council may fix rents, etc.*—The Lieutenant Governor in Council may from time to time, by order in Council, reserve and fix such rents, royalties, tolls, and charges in respect of the water used or taken and used, and of the lands of the Crown used, and of the rights, powers, and privileges which may be acquired by any licensee under this Act.”¹ It is further provided that the lands, royalties, tolls, and charges so fixed shall not be altered or changed save with the consent of the licensee for a period of three years after the passing of the order fixing the same. Subject to this, the Lieutenant Governor in Council may repeal any order reserving and affixing the rates and charges as aforesaid or alter the same as may be deemed expedient. The rents, etc., imposed upon power companies may be founded on the power produced or the quantity of water used, as may be deemed expedient. All by-laws fixing tolls, rents, etc., of any company must be submitted to the Lieutenant Governor in Council for approval who may approve or disapprove of the same in whole or in part “and may adjust, increase, or decrease such tolls, rates, or charges, as may be deemed expedient in the public interest.” Notice of the intention to submit for approval any schedule of rates must be published; any person interested may appear before the Lieutenant Governor in Council at the hearing. After the rates have been fixed the schedule of such rates must be published; “and in any action brought against any person for nonpayment of any charge thereunder, such person may plead, as an answer to such action, that the publication had not been made as aforesaid.”

§ 230. **British Columbia—Water Act—Reservations—Correction of errors in licenses.**—Sections 316 to 318 provide that the Lieutenant Governor in Council may at any time, by notice signed by the Minister and published in the “Gazette,” reserve from being taken or used or acquired under this Act any unrecorded water in any stream or in any portion thereof. The purposes of such reservations are specified as those for the use of the Crown, for municipal purposes, or for the purpose of making provision,

¹ 1909, c. 48, s. 306.

wherever it appears expedient, as a source of supply for a water works system, or for the storing of water, or for such other purposes as may be deemed advisable. An order in Council establishing a reserve of water shall contain a direction for a record of the amount of water so reserved with all necessary particulars. Interim licenses may be granted for the use of water prior to the establishment of the system for which the reservations were made.¹ The Lieutenant Governor in Council may cancel any reservation of unrecorded water made under the above provisions. Fees may be charged companies erecting pulp or paper mills for the use of water.

Sections 319 to 321 provide for the amendment of licenses. “319. Whenever a license under this Act has been imperfectly issued, or has been issued without compliance with all of the terms of this Act, the Comptroller of Water Rights may, upon the application of the holder of such defective license, amend the same, or may cancel the same and grant a new one in its stead, which new or amended license shall relate back to the date of the original and shall operate as if issued at the date of such original license, but the quantity of water to be taken under such new or amended license shall not be increased, nor the area in respect of which the former license was used or held be enlarged.”² The licensee intending to apply to have a license amended must give notice in the “Gazette” and in a local newspaper of his intention and proceed in accordance with the rules laid down in the Act.³ The hearing upon the application must be had before the Comptroller of Water Rights and any person interested may appear. Appeal shall lie from any such decision to the Minister in manner hereinafter prescribed.⁴

§ 231. British Columbia—Water Act—Respecting appeals—The certificate of the Lieutenant Governor.—Section 322 provides that in all cases where the right to appeal from the Water Recorder or the Comptroller of Water Rights to the Minister or from the Minister to the Lieutenant Governor in Council is given by this Act, such appeal shall be a rehearing by petition and be regulated as

¹ Sec. 316, as amended by s. 61 of the Act of Feb. 26, 1912.

² 1909, c. 48, s. 314, as amended by Act of Feb. 26, 1912, s. 63.

³ Sec. 320, as amended by s. 64 of the Act of Feb. 26, 1912.

⁴ Sec. 321, as amended by s. 2 of the Act of Feb. 26, 1912.

provided in the section. Such petition shall set out fully all facts relative thereto as they appear before the Water Recorder or the Minister and all documents relating to the subject shall state the persons upon whom the petition has been served, and shall be verified by the petitioner's affidavit. The petition shall be presented to the Minister, or if the appeal is from him, then to the Provincial Secretary, within thirty days from the making of the order appealed from. Upon the receipt of the petition the Minister or the Provincial Secretary, as soon as conveniently may be, shall fix a place, day, and hour for hearing of the petition, and may direct that a copy of the same shall be served upon any other person or persons that he may think proper. Within ten days of the service of the petition the respondent or any of the persons served may file an answer and shall serve a copy thereof on the appellants. The Lieutenant Governor in Council or the Minister may make any order in the matter he may deem just. "Upon the hearing of the petition, the Lieutenant Governor in Council or the Minister, as the case may be, shall determine the matter upon its merits and make such order thereon as shall be deemed just."¹

323. *Effect of Lieutenant Governor in Council certificate.*—Any certificate granted by the Lieutenant Governor in Council pursuant to this Act, and any license referred to in such certificate or which has led to the issuance of such certificate, shall, if such license or certificate shall not have been canceled, or declared null or void under any of the provisions of this Act or otherwise, be conclusive evidence in any court of law or other tribunal in the Province of all matters and things therein contained, and shall not be inquired into or disturbed in any manner whatsoever, save in some proceeding to which the Attorney General of the Province is a party, or by petition of right, or by the consent of or at the request of the Lieutenant Governor in Council expressed through the said Attorney General.²

§ 232. **British Columbia—Water Act—Rules and regulations.**
—324. *Power to refer.*—The Lieutenant Governor in Council or the Minister may refer any matter, question, or thing to any person whatsoever for the purpose of obtaining information or making

¹ Sec. 322, as amended by s. 65 of the Act of Feb. 26, 1912.

² 1909, c. 48, s. 318, as amended by Act of Feb. 26, 1912, s. 66.

any inquiry or taking any account upon oath, or otherwise, and may act upon the report of such referee or not, as may be deemed expedient.¹

325. *Make rules.*—The Lieutenant Governor in Council may from time to time make, alter, and repeal rules and regulations for carrying out the spirit, intent, meaning, and purpose of this Act, including matters in respect whereof no express or only partial or imperfect provision has been made, and, without restricting the generality of the foregoing, in respect of the following matters and things: The time and place of payment and collection and enforcement of payment of rents, charges, etc.; the powers, duties of, jurisdiction of the Comptroller of Water Rights, the Water Recorder, and other officers to give effect to the Act; regulate headgates, flumes, weirs, and water-gates, and all measuring devices and the manner in which they are to be placed and used; the information required to obtain the approval of licenses; the hearing of appeals; the extension of time for presenting petitions and other applications; the issuance of certificates; proceedings by municipalities to expropriate the water rights of others; obtaining any information for any purpose whatsoever; the entry upon, using, and taking Crown lands, and prescribing the conditions therefor; the service of notices on any municipality, company, or person; the deduction for seepage and evaporation and the mode of determining the same; the books to be kept by the Water Recorder; respecting maps, plans, specifications of any works; classifying violations of the Act and providing penalties for each such violation.²

§ 233. **British Columbia—Water Act—Penalties.**—Section 326 provides that if any person does or commits any of the following acts: Wilfully and maliciously hinders, interrupts, or causes the same to be done, any municipality or company in the exercise of any of the powers and authorities by the Act conferred; wilfully or maliciously lets off or discharges any water so that the same runs waste or useless out of any works; being occupant, tenant, or inmate of any house, supplied with water by any municipality or company, sells or disposes of the water thereof or gives it away

¹ 1909, c. 48, s. 319.

² Sec. 325, as amended by s. 2 of the Act of Feb. 26, 1912.

or permits it to be taken or carried away or uses or applies it to the benefit of others or to any other than his own use or benefit, or wrongfully neglects or improperly wastes the water; not being in the employment of a municipality or fire brigade wilfully opens or closes any hydrant; throws or deposits injurious, noisome, or offensive matter into the water and water works or encourages the same to be done; wilfully alters any meters; lays or causes to be laid any pipe or main to communicate with any pipe or main; or wrongfully takes or appropriates any water from any public or private tap or in any way obtains or uses any water of the said water works without the consent of the said municipality or company; bathes or wastes or cleanses any wool, cloth, leather, skins of animals, or permits any nuisances or offensive thing within or near the source of supply for any works used for domestic purposes in any stream from which the water for said purposes is obtained; without lawful excuse interferes in any manner whatsoever with any works; such person shall for any such act, upon summary conviction, be liable to a penalty not exceeding two hundred and fifty dollars, together with the costs and charges attending the proceedings and conviction, and in default of payment to imprisonment for a period not exceeding two years.

(2) *Penalty for unlawful diversion.*—Any person who wilfully, without authority, takes or diverts any water from any river, stream, lake, spring, or other waters, or from any works authorized under this Act, and any licensee or other person who takes or diverts therefrom any greater quantity of water than he is entitled to, shall be liable, upon summary conviction, on a complaint laid by a Water Recorder, to a fine not exceeding five dollars per day or fraction of a day for each cubic foot per second or fraction of a cubic foot per second of water improperly diverted, or to imprisonment for a term not exceeding thirty days, or to both.¹

Sections 327 to 336 provide that a conviction as above prescribed shall not relieve the defendant from any liability to answer in damages. Any licensee wilfully violating any provisions of this Act or the terms and conditions upon which the license has issued, or the approval of the Comptroller of Water Works or the Lieutenant Governor in Council, or the rules shall, after the hearing provided for, "be liable to have his license forfeited and all the

¹ 1909, c. 48, s. 321, as amended by Act of Feb. 26, 1912, s. 67.

rights and privileges granted, revoked, and canceled, or to such other penalty as any rules on the subject may prescribe.” Any person injuriously affected by such a violation may present a petition to the Provincial Secretary, addressed to the Lieutenant Governor in Council, praying for relief and for the punishment of the offenders. Upon hearing any such application as aforesaid, the Lieutenant Governor in Council may revoke and cancel the license granted to the offender, and declare all his rights and privileges forfeited, or held in abeyance for such time as the Lieutenant Governor in Council may direct, or otherwise make any order respecting the matter, as may be deemed expedient.

Any person who in any way wilfully obstructs or interferes with the undertaking and works of any municipality, company, or person, shall on summary conviction thereof be liable to a penalty for every such offense of not exceeding one hundred dollars, together with the costs, and, in default of payment, to imprisonment for a period of not more than two months. The penalty for molesting or interfering with any officer in the discharge of his duty is fixed at a fine of not less than twenty dollars, and not exceeding one hundred dollars, and, in default of payment, to imprisonment, with or without hard labor, for a period of not more than two months. It is made unlawful to obstruct the natural flow of water courses by throwing any slabs, bark, sawdust, or waste stuff from saw mills in or across such water courses. The penalty for this offense is a fine not exceeding ten dollars, and not less than one dollar, for each day during which such condition exists over and above all damages arising therefrom, and in default of such payment, the offender shall be liable to imprisonment for a period not exceeding two months. The provisions of these last two sections, however, shall not apply to a dam, weir, or bridge erected in or over such lake, river, stream, rivulet, or water course, or to anything done *bona fide* in or for erecting the same or to any tree felled across such for the purpose of being used as a bridge; provided such tree does not impede the flow of the water or the passing of rafts.

336. *Recovery of penalties.*—Any penalty under this Act may be recovered with costs upon summary conviction before any stipendiary magistrate, police magistrate, or justice of the peace.²

§ 234. **British Columbia—Water Act—Saving clauses.**—Sections 337 to 342 provide that notwithstanding anything in the Act contained, it shall be lawful for the Lieutenant Governor in Council, in remote districts and under special circumstances, to increase the quantity of water mentioned in the preceding sections of the Act, over which the Water Recorder may exercise the jurisdiction of approving of the works of the licensee. Application under any former Act, not completed on the 12th day of March, 1909, may be continued to completion under such former Act or under the Water Act, as the applicant may elect. If the application be in accordance with any former Act, then the applicant shall apply for and obtain a license as provided in the Water Act. Save as above set forth no proceedings shall be taken under any former public Act to acquire any right to water or the use thereof. The holders of water rights under any former public Act shall have all the rights and privileges granted licensees under the Water Act, and shall be liable to all the obligations imposed by the Water Act on licensees. Notwithstanding the repeal of any former legislation, the rights and privileges acquired thereunder are expressly preserved, subject, however, to all conditions and provisions of such repealed legislation and to the provisions of the Water Act applicable thereto.

By Sections 68 and 69 of the Act of February 26, 1912, the following provisions were added to the Water Act, subject to any Dominion statute or order in Council, governing the same. The provisions of the Water Act shall extend to the waters and streams within the Railway Belt, including all records, applications for records, licenses, applications for licenses, or claims to water or water rights in respect thereof. Applications which have been made or filed with the Water Commissioner under any former Act, not completed at the commencement of this Act, may be continued to completion under the provisions of said former Act, or under this Act, as the applicant may elect.

§ 235. **British Columbia—"Water Act"**—Our criticism of the Act.—In this chapter we have detailed at considerable length the laws of the Canadian Provinces of Saskatchewan, Alberta, and British Columbia. We did this for the reason that we decided in a comparative way to show the distinction between the laws of

those Provinces and the laws of the Western States of this country. In those Provinces the absolute title of the water is vested in the Crown and by the "Irrigation Act" of Saskatchewan and Alberta and the "Water Act" of British Columbia the absolute control, even to the most minute detail, is also vested in the Government by statutory laws covering every phase of the subject. In this country it is different, even in States which have the most drastic statutory laws. Many of the questions involving the diversion and use of the waters are left open, thereby leaving a loophole for controversy and continuous litigation.

The details of our criticism will be given in the next two sections and are applicable to a large extent to all three of the Provinces above named, although written with a view only of criticising the Saskatchewan and Alberta laws.¹

The Water Act of British Columbia of 1909, as amended by the Act of February 26, 1912, and abstracted in the preceding sections,² is still new. No litigation has yet arisen concerning its provisions, as the author was informed by Mr. J. F. Armstrong, Acting Comptroller of Water Rights, in a letter under date of April 4, 1912, in which he said: "The first sitting of the Board as now constituted was held in Kelowna, in October, 1911. The Board then passed on 320 records, fixing the precedence and priority of each and settling the basis on which a quantity of water would be allotted to each claimant, and the manner of determining to what lands each record was appurtenant. These decisions proved satisfactory to all claimants who were present. The Board considered that a grant of a constant flow of water was not suited to our system of irrigation, and was particularly inconvenient where land had been subdivided into small blocks of five or ten acres, and therefore announced that the quantity allowed should be expressed in acre-feet per annum.

"The Board has since examined the records and compared them with the plans under the direction of the Chief Hydrographer of the Department and with other information in our archives. Awards are now almost completed and will be rendered at an adjourned meeting in a couple of weeks; they will then be subject to appeal. The chief difficulties encountered by the Board were caused by the imperfect manner in which the records before 1897

¹ See Secs. 236, 237.

² See Secs. 202-234.

were made. Much research was necessary to complete the information which had been omitted in the records. Some of them did not have any description of the stream, others omitted or exaggerated the quantity of water granted, and most of them did not define the land to which the records were appurtenant. About 1200 licenses will be issued in substitution of the 320 records.

"The Board made its award on the following principles, when the record did not show the contrary. 1. Priority of record is priority of right. 2. The works on the ground are the best evidence as to the intentions of the record holder and of the commissioner who granted the record. 3. Records are appurtenant to such of the lands occupied by the record holders at the date of the record as could be irrigated under the system then in vogue."

Also Mr. R. W. Ross, Minister of Lands, in a letter under date of April 8, 1912, writes the author: "You will see from this that we are only now getting the Water Act into working shape for active administration, as the last few years have been occupied in securing engineering information upon which the judgments of our various boards will be based, and also upon which the decision of our Comptroller of Water Rights with reference to further licenses will be guided.

"During the season of 1911, the first large number of board decisions was given, but the actual awards have not yet been handed out, so that there has not yet been an opportunity for litigants to formulate appeals from these decisions."

The Water Law is drastic and covers the subject of the title to and the use of waters in its most minute details. In fact, we consider it one of the most effective statutory laws upon the subject in existence, and undoubtedly it will stand the test of both time and all the litigation, under the Canadian form of government, that may be brought against it.

§ 236. **Saskatchewan and Alberta—Review and our criticism of the "Irrigation Act."**—To make the record of all water rights complete and to prevent disputes regarding vested rights at the time the original Northwest Irrigation Act went into effect,¹ provisions were made in Section 7 of that Act that all rights of

¹ See Sec. 185.

a kind similar to those which can be acquired under the Act were required to be registered before the first day of July, 1898, or to be forfeited to the Crown. The amended Act of 1906 also declares forfeited to the Crown all such rights unless they had been duly licensed under the Northwest Irrigation Act of 1894. The wisdom of these provisions will be recognized when it is remembered that only by a complete record of the rights to the water of any river or stream can it be hoped to deal intelligently with the supply from such source. It was recognized in the earliest stages of the administration of the Act that the first duty of the Government was the endeavor, by a careful system of topographical and hydrographical surveys, to determine the actual supply of water available from each source; and, to accomplish this, the Canadian Irrigation Surveys were inaugurated and carried on systematically each year. One of the main features of the work undertaken was to determine, by careful measurements and gaugings, the actual supply of water available from each stream and other source for irrigation, so as to know what there was to grant, and thus prevent the possibility of waste of money resulting from the construction of canals and ditches, for which the owners can not hope to obtain water without taking what rightly belongs to some one else. This system, strictly enforced by the administrative officers, was also a complete bar to all "wildcat" or "boom" enterprises. This phase of the administration of the law is dealt with as follows: Each stream or source from which water may be diverted is given a place in a register containing as it were a debit and credit account of the water, the credit side being filled up from the measurements and gaugings of the supply at low water, high water, and flood discharge; and the debit side being a charge against this supply of rights to such water acquired under the Act and the vested rights prior to the Act. An examination of this register at any time shows the exact balance between available supply and recorded rights and permits of the immediate settlement of the question of whether there is water available to meet the requirements of each application in the future as it is filed for approval. This system practically delegates to the officers administering the Act the power to prevent the probability of future disputes between the holders of water rights by refusing

to approve any application which it is considered might tax any source of supply beyond its capabilities and thus cause friction between recorded rights; and, although this method of dealing with the public may seem drastic, it is held to be reasonable that the Crown should not undertake to dispose of more water than it can deliver. It must be admitted that the introduction of this system in the earlier days of irrigation development will tend to prevent waste of water in endeavoring to enforce or protect fictitious water claims by long drawn out legal contests. This is one of the principal reasons why there has not been more litigation over water rights in Canada.

The provisions of Sections 19 and 20 of the Irrigation Act regarding public notice and authorization of construction of works, and providing that the Minister may dispose of any protests against applications, have resulted in clearing many undertakings in their inception of objections and disputes which, if left for settlement later, would certainly have resulted in much annoyance, and, in many cases, serious inconvenience and litigation.

A fruitful cause of trouble with all undertakings necessitating the taking of land for rights of way is the question of the area to be taken and the price to be paid therefor. Under Sections 28 to 32 of the Act, possession is authorized and puts the holder in position to expropriate lands necessary for the right of way required and makes the ruling of the Minister final, as to the area necessary, the question of damages only being settled by arbitration. These provisions are also designed to and do prevent litigation.

The document conveying the right to use the water under the Irrigation Act is termed a license, and would perhaps be better designated as a water patent but for the fact that it does not convey any title to the water from the Crown, but simply a license to use the water subject to cancellation upon the failure to comply with certain conditions of the Act after the issuance of the certificate of license.² Hence it can not be called anything but a conditional title, not to water, but to its use. *The absolute title still remains in the Crown*, but the licensee has the right to the use of the water as long as he complies with the conditions imposed by the Act.

² See Sec. 193, or Secs. 33-48 of the Irrigation Act.

The license purports to transfer the use of a definite quantity of water for the irrigation of a defined area of land; but the licensee, in order to maintain his title to the use of the water, must live up to the provisions of the Act.

The definite quantity of water conveyed settles at once the question of the limit and extent of the right, and no loophole is left for advancing a claim that the right is defined by the size of the canal or ditch or area of the land to be irrigated or the rights of other claimants to the same water, as is the case under the loose laws of some of the States of this country. The stage at which the water is granted is also indicated and the means of determining the stage settled, so that disputes as to when a licensee is entitled to take water can not arise and, at the same time under the system of granting licenses against the three stages, viz., low water, high water, and flood stage, it is possible to grant rights to all the flow of water available for diversion without prospect of a dispute between the holders of such titles. Regardless of the state of the stream the licensee is entitled to just so much water and no more than is called for in his license and at the time stated therein; and, if there is a large surplus over and above the amount granted, he is prohibited by the criminal sections of the Act,³ from taking or diverting any greater quantity of water than that actually granted by his license, under severe penalties and upon summary conviction.

Under the Irrigation Act the irrigation season and the duty of water are both fixed by the Minister,⁴ as stated in the official bulletin:⁵ "*Duty of water.*—The ratio between a given quantity of water and the area of land it will irrigate has been fixed at one hundred and fifty acres for each cubic foot of water per second flowing constantly throughout the 'irrigation season,' and all licenses are issued upon this basis. *Irrigation season.*—The portion of the year during which water may be used for irrigation purposes has been defined as a period from the 1st of May to the 30th of September."

Another important point is that the licensee, in order to main-

³ See Sec. 200, or Secs. 58-61b of the Irrigation Act.

⁴ See Sec. 199, or Sec. 54 of the Irrigation Act.

⁵ See Bulletin No. 1, Irr. Series, Dept. of Int. of Canada, 1910, p. 10.

tain his title to the use of the water, must live up to the provisions of the Act. It will be noticed that the provisions of the Act for the cancellation of the license illustrates one of the marked points of difference between the Canadian laws and the laws of some of the Western States of this country relating to irrigation. Upon this subject Canada undoubtedly has the better laws. Under the most of the laws of the Western States the forfeiture of rights for nonuser or failure to comply with other provisions of the law must be treated as abandonment⁶ or enforced by legal process, which is capable of years of vexatious delays. The Irrigation Act,⁶ upon the other hand, provides the simplest and most effective machinery for the cancellation of the certificate for nonuser, and the result is that the owners of water rights who live up to the provisions of the law receive ample protection in the enjoyment of these rights, without having to resort to the Courts to have them defined or enforced; such a thing as maintaining a right to water unless its beneficial use is continued is not possible under the Irrigation Act of these Provinces.

Sections 24 and 27 of the Irrigation Act⁷ provide for fixing in the authorization for construction the time within which works must be completed. A "reasonable time" in this case is a definite time, fixed by the Minister. The question of the "reasonable time," as the same is known in the United States relative to the same question, is not known in Canada,⁸ but the works must be completed within the time fixed by the Minister. It is true that for any unforeseen disaster, or for any other reason the Minister deems expedient, he may authorize an extension of the time within which the work may be commenced or completed. But this extension of time is also a definite time within which the works must be completed. This provision, strictly enforced, tends to compel the persons or companies applying for rights under this Act to go ahead and complete the construction within the time allowed. Otherwise, the application may be declared forfeited and the rights and works sold to other parties who will construct them. There is no taking up in that country of vested property rights and

⁶ See Sec. 196, or Secs. 45-48 of the Irrigation Act.

⁷ See Sec. 191.

⁸ For Reasonable Time, see Secs. 733-741.

holding them for an indefinite time by doing a little or no work, with the hope of selling out to other parties with a profit.

Sections 28 to 32 of the Irrigation Act ⁹ provide for the taking of lands for the works of the applicant. Some of the features of the sections are decidedly peculiar, and would be called arbitrary in this country. Lands required for this purpose, in whomsoever they are vested, "whether in the Crown or in any other applicant or licensee, or in any railway company, or in any other person whomsoever," may be taken and acquired by the licensee. It will be noticed that under these provisions a larger enterprise can appropriate the works of a smaller one. To be sure, the policy of granting the application is left to the Minister and to the Department; and the terms and conditions upon which the request may be granted are also left to the same authority, as is also the question of the land to be taken; but under these provisions profitable and going concerns, although small, may be compelled to sell out to a large concern. Whether this ought to be permitted has often been questioned in this age of trusts. A man should not be compelled by law to sell out a going and profitable business to a larger company which, by acquiring these as well as other interests, afterward runs the business as a monopoly. But under the wise provisions of this Act and other Acts governing the subject, the question of monopoly seems to have not arisen in these Provinces.

Under Section 33 of the Irrigation Act ¹⁰ agreements must be entered into by the licensee with users of the water to use the whole supply the applicant applies for, otherwise the license is granted for the quantity only that is actually used. No water under this provision can be laid claim to unless it is actually to be used by the applicant or those who have contract with him.

Under Section 34 of the Act ¹¹ licensees having priority of numbers are given the priority of right; and the settlement of all disputes between licensees is left to the Minister, who decides the question in a summary manner and at once executes his judgment by closing the gates of the licensee who is receiving an undue supply of water. Not only this, but under Section 60 of the Act ¹² the person improperly diverting water may be tried upon a criminal charge and sentenced to pay a fine, or to imprisonment. These

⁹ See Sec. 192.

¹⁰ See Sec. 193.

¹¹ See Sec. 193.

¹² See Sec. 200.

two sections together almost entirely prevent the unlawful taking or stealing of water that is so common in the United States. A definite quantity of water in each case being awarded, it is easily determined by measurement whether or not any person is taking more than he is entitled to.

Section 38 of the Act¹³ compels a licensee to sell any surplus water flowing in his works to any person applying therefor and tendering payment one month in advance at the regular price. This section tends to prevent any waste of water, in fact, the intent of the whole Act being that all the water shall be used if it is needed. This section applies only to the surplus water and does not interfere with the sale or use of the water by the regular methods.

Under Section 39 of the Act¹⁴ the proceedings upon the complaint of a customer of a licensee are peculiar and drastic, and under the constitutions of the States of this country would be prohibited. The determination of the matter is left, in the first instance, to the executive officer—the Minister. He makes a certain order as he deems just in the premises. If the licensee fails to obey the order of the Minister, the matter is referred to the Judge of the Supreme Court, who hears and determines the matter in a summary manner, and shall order the licensee to proceed with all dispatch to take such measures as he may consider necessary in the premises. And it is provided that a refusal to obey the order shall be treated and punished as contempt of court.

Under Section 44 of the Act¹⁵ the Governor in Council may, if in the public interests it is at any time deemed advisable so to do, take over and operate or otherwise dispose of the works of any licensee authorized by the Act. As the foundation of the title of the licensee to the water rights is but a license, the theory of the section is that the Governor may cancel the license at any time if it should be judged for the public good. This is simply a summary method of condemnation. But, of course, compensation must be paid for the works according to the procedure set forth in the section. This section would seem to the author to deter capitalists from taking hold of irrigation projects, because of the fear of the Government taking over the works should the Minister at any

¹³ See Sec. 193.

¹⁵ See Sec. 196.

¹⁴ See Sec. 194.

time think it was for the public good. Capital is rather a particular creature. It will go into enterprises either as a permanent investment or with a view of selling out some time in the future, but it does not like to go into an enterprise when it is known that some time in the future it may be compelled to sell out.

Under Section 51 of the Act ¹⁶ any company or person authorized under the Act may acquire large tracts of land and a license for a great amount of water to irrigate the same. But in order to prevent a monopoly in lands and water, the company is compelled to dispose of such lands to others within fifteen years after acquiring the same, except 10 per cent of the total area of the land actually brought under cultivation or being used for farming, gardening, stock raising, etc., by the company. Any lands not so disposed of shall revert to the Crown. The result of this section will be that the large tracts of lands will be cut up into smaller farms which, under irrigation, will support a larger population.

Section 52 of the Act ¹⁷ requires each company to file a detailed statement of the affairs of the company each year. This makes a record in the hands of the Government officers of what each company is doing. It is a decidedly unique law, as far as irrigation matters are concerned, and more in line with what is required of banking and insurance companies in the United States. This section enables the officers to tell just how each company is standing at the date of the statement, financially and otherwise, whether they are complying with the law, and whether or not all of the available water supply is being utilized.

There is one subject provided for in the Irrigation Act that requires special attention, and that is the extreme judicial powers that are conferred upon the executive officers under the Act, and in particular the powers conferred upon the Minister. These officers are empowered to try civil cases and decide them under the law and evidence. They are also empowered to try criminal violators of the law in a summary manner, and if they find the defendant guilty, to either fine him or send him to jail, or both. These judicial powers conferred upon the executive officers named in the Act account in large measure for the fact that there are so few water cases which have been brought into the Courts. The only limitations upon the Minister are imposed in Section 54,

¹⁶ See Sec. 197.

¹⁷ See Sec. 197.

subdivision "i" of the Act,¹⁸ and under this section he is given the power to impose penalties for the violation of any regulation made under the authority of the Act, or in other words, by himself, but which penalties shall in no case exceed a fine of two hundred dollars or three months' imprisonment, or both. There is no doubt that in many cases minor infractions of the law might be dealt with in as just and equitable manner and, indeed, much more expeditiously by these provisions of the law than by the Courts. But in the United States, under our Federal and State constitutions, these extreme judicial powers can not be conferred upon executive officers because of constitutional limitations. Even under the laws of Canada they may be counted as drastic, especially in a country that follows the common law as its foundation upon legal principles.

§ 237. Saskatchewan and Alberta—Irrigation Act—Comparative study—Riparian rights.—Before any irrigation legislation was enacted in Canada the Dominion Government sent a commissioner to the Western part of the United States to make a study of our irrigation and water laws. After visiting a number of States and examining into their system of laws, and attending a number of Irrigation Congresses held therein, Mr. John S. Dennis, the commissioner, upon his return presented a report in which the first recommendations were as follows:

"1. The total suppression of all riparian rights in water, so that the same, being vested in the Crown, may be distributed under well-considered Government control for the benefit of the greatest possible number.

"2. That having taken away this individual right, the Government is in duty bound to exercise that control of its distribution and use, which, while encouraging the investment of capital in the works necessary for its distribution, will protect the individual and result in the greater amount of public good.

"3. That water, owing to its use in irrigation, having become a commodity with defined monetary value, its sale, transfer, and use shall be hedged about with the same safeguards that are enacted regarding real estate or personal property."

¹⁸ See Sec. 199.

The Northwest Irrigation Act¹ was formed in accordance with the recommendations of this report, originally applying to the old Northwest Territories. And after the organization of the Provinces of Saskatchewan and Alberta out of what were portions of the old Northwest Territories, the Act as amended was made to apply to those Provinces and entitled the "Irrigation Act," discussed in previous sections. The sections of the Act as amended in 1906, referring to riparian rights, are numbers 6 to 11, inclusive, of the Irrigation Act.² Under these sections, it will be noticed that riparian rights were absolutely abolished, with the exception of those few rights which had vested at the time of the passage of the Act, and are limited to whatever the riparian owner "requires for domestic or industrial purposes." This was a wise measure, as there should be no conflicting laws in regard to water rights in a country where the diversion of the water of the rivers and streams for irrigation is necessary. In order to have such a country settled up irrigation must be practiced. In order to practice irrigation the water must be diverted from the streams and applied to the land. This is exactly the converse of the doctrine of riparian rights upon the subject, which is that the water must continue to flow in the streams as it was wont to flow by Nature.³

In these Provinces at the time the Act was passed, the land, with the exception of that which had been granted as subsidies to railway companies or alienated through homestead or pre-emption grants, sales, etc., all belonged to the Crown, and title to any of the water in the streams or other natural channels had only passed from the Crown in so far as the rights of riparian owners were concerned, and which rights were very small. So the conditions at this period were particularly favorable for the recognition of a law regarding the definition and use for the water supply for irrigation. The investigations into the subject led to the conclusion that the foundation provision necessary to an Act of this kind was that riparian rights should be abolished and the Government given a free hand to apportion or distribute the water and control its use in such a way that the greatest good to the greatest number would result therefrom. Therefore the Act pro-

¹ See Sec. 185.

² See Sec. 189.

³ For the Common Law of Riparian

Rights, see Chaps. 21-28, Secs. 450, 451.

vided for the abolition of riparian rights and the vesting of title and control of all the water in one strong, central authority, the Crown, or the Government itself. It was also considered that in many of the States in the United States riparian rights had been abolished and the title to the water vested in the States; but in these States it was also found that there was much vacant land that still belonged to the Federal Government, and that under this condition it was impossible to so combine the land and the water owing to this divided authority and ownership as to secure the most beneficial results therefrom. Also, it was considered that in some of the States of this country riparian rights still existed, but in Canada, the Crown being the owner of both the land and the water, had the power and authority to make such rules as it saw fit in regard to the disposition of each. There is no doubt in the mind of the author but that one central authority being vested with the ownership and control of both the land and water makes it possible to also administer and dispose of the two as to secure the greatest possible benefit to the greatest number. And Canada, taking advantage of the almost untold confusion in some of the States resulting from this diversity of ownership of lands and water and contradictory laws governing the same, was wise in passing an Act abolishing the common law of riparian rights.⁴ Thus Canada is also another Province of England that has abolished one of the fundamental laws of the Mother Country, where the same was not applicable to the physical conditions of the country. And still, some of the States of this Union, where the physical conditions are practically the same as in Canada, have, from a slavish following of precedence as laid down in the common law, retained this antiquated and obsolete principle of the common law of riparian rights. Had the United States taken the same precaution that the Canadian Government did relative to the title and disposal of its land and waters, or even as this Government did relative to its own lands, we would not now have the confusion in the matter of water rights that we have. Instead of that, this Government at an early date became vested with the title of all the public lands within its bor-

⁴ See, also, for the abolition of riparian rights, the Laws of Australia, Secs. 119-130; the Laws of India,

Secs. 103-118; the Laws of Egypt, Secs. 100, 101.

ders and enacted definite and specific laws as to their disposal. At the same time the Government made no claim to the waters of the rivers and streams which flowed over its lands, but at an early day enacted a law that permitted any and all persons to take the waters from the streams and obtain a vested right to the use thereof, so long as the water was used for "mining, agriculture, manufacturing, or other purposes."⁵ And, ultimately, this Government, still retaining the title to the public lands, granted statehood to the various States that now cover the whole of our Western domain, and at the same time turned over to these States the government and control of the waters that flowed within their respective boundaries. This has led each State to enact laws governing the subject of waters within their respective boundaries, and the result is, that the laws of each State are different from the laws of any other State. Of course, almost untold confusion and interminable litigation have resulted. And, finally, when this Government awoke to its necessities and passed the National Reclamation Act,⁶ it in many instances finds its way blocked by the vested rights of individuals, by the laws of the different States, and by a general lack of a uniform system for the whole country. Truly the Canadian Government is to be congratulated upon passing such a law upon the subject of waters at such an early stage of the settlement of its western domain. And while the laws of the Canadian Provinces relating to irrigation are still in their infancy or formative period, and possibly defective in many respects, the guiding principle and the aim of those laws and their administration are security of title and the use of available water supply for irrigation in such a manner as to bring the greatest and most lasting benefits to the greatest number. It will be noticed that the Act is clear-cut and decisive and grants large powers to the administrative officers, larger than any that are granted to similar officers of our Western States. The result of this is that in 1904, Mr. John S. Hall, K. C., wrote the author: "I have not been able to find any proceedings or reports of cases, whether in British Columbia or in the Territories, where any conflict has arisen. This is largely due to the recent period within which irrigation has been practiced in these parts. I have no

⁵ See Acts of 1866 and 1870, Secs. 611-619.

⁶ For the National Reclamation Act, see Chap. 65.

doubt that when irrigation is more largely and universally applied, and more land taken up on which irrigation will be necessary and water scarce, numerous cases will arise. These, however, may not be very serious, on the ground that *all the water has now been appropriated and declared to be the property of the Crown or public, and a license to use the same can only be obtained from the Government.*"

And now, after the Act has been in force more than a decade, under date of March 20, 1912, Mr. F. H. Peters, the Dominion Commissioner of Irrigation, writes the author: "I would also say that there has been practically no litigation arising over conflicting rights under the Irrigation Act, and to my knowledge the Appellate Courts have had no occasion to construe the provisions of the Act. The only disputes which have arisen are, to my knowledge, as follows: One dispute *re* the defining of the source of supply, which was settled by arbitration. One dispute *re* rights of riparian owners, which also is shortly to be settled by arbitration. One dispute *re* the right of way of a ditch."

And in conclusion, from all the reports that the author has been able to obtain, the Dominion Government, the Executive Officers under the Government, irrigation and water companies, and last, but most important, the settlers and actual consumers of the water, are well satisfied with the workings of the Irrigation Act and the way it has been enforced. In fact, the settlers have abandoned the irrigation districts formed under the old Irrigation District Ordinance, preferring to have their rights looked after and supervised by the executive officers provided for by the Irrigation Act.

CHAPTER 11.

MODERN IRRIGATION IN THE UNITED STATES.

- § 238. Scope of chapter.
- § 239. The arid and semi-arid regions.
- § 240. States included in the arid and semi-arid regions.
- § 241. The first of modern irrigation in the United States.
- § 242. Settlements by the Spaniards.
- § 243. The Mormons—First settlement.
- § 244. The Mormons—The cause of the settlement and condition of the country.
- § 245. The Mormons—Their policies and success.
- § 246. The Mormons—Co-operative system—Size of farms.
- § 247. The Greeley Colony—The first settlement.
- § 248. The Greeley Colony—Cause of the settlement.
- § 249. The Anaheim Colony, California.
- § 250. Riverside Colony, California.
- § 251. Growth of irrigation, 1847-1880.
- § 252. Growth of irrigation (continued), 1880-1890.
- § 253. Growth of irrigation (continued), the eleventh census of 1890.
- § 254. Growth of irrigation (continued), 1890-1900—The twelfth census of 1900.
- § 255. Growth of irrigation (continued), 1900-1910.
- § 256. The thirteenth census of 1910.
- § 257. Irrigation in the humid States.
- § 258. Irrigation in the humid States (continued).
- § 259. Irrigation in the humid States (continued), twelfth census, 1900.
- § 260. Irrigation in the humid States (continued), thirteenth census, 1910.
- § 261. Irrigation in the rice-growing States—Louisiana.
- § 262. Irrigation in the rice States (continued)—States east of the Mississippi River.
- § 263. Irrigation in the rice States (continued)—The use of pumping plants.
- § 264. Irrigation in the rice-growing States (continued)—Census reports, 1900 and 1910.
- § 265. The water supply—The extension of the irrigated area.
- § 266. The present condition of the laws of irrigation in the different States.
- § 267. The divided jurisdiction over lands and waters.
- § 268. The necessity for irrigation in this country.
- § 269. The future of irrigation in the United States—A National question.
- § 270. Future of irrigation—Secretary Hitchcock's report.

§ 238. **Scope of chapter.**—In the preceding chapters of this part we have described the irrigation practices and laws of those foreign countries of the world, both ancient and modern, where that science has been and is practiced to the greatest extent.¹ In this chapter we will relate the beginning and history of the progress of the practice of that science in our own country, in modern times and by our own people. In the following chapter we will relate what is being done by the Indians in the various States of this country,² and how the practice of irrigation by them is tending toward their civilization and education.

§ 239. **The arid and semi-arid regions.**—The arid region of the United States is included within that portion of the United States west of the ninety-seventh meridian and extends to the Pacific Coast, and from the British possessions on the north to Mexico on the south. There are no sharply marked lines between the arid and humid areas; but between the two there lies a broad strip of land that is neither distinctively arid nor humid, which is called semi-arid or subhumid. Also within the so-called arid region there are more favored tracts of country, where crops can be raised in certain years without the aid of irrigation; these tracts may also be classified as semi-arid. Then, too, on the western edge of this region, along the Pacific slope, there are certain portions where there is an excessive precipitation, notably the western portions of Oregon and Washington, that may be called humid, while on the same slope in southern California, the rainfall is so small that this section may be classified strictly as arid. From this it may be seen that about two-fifths of the entire area of the United States lies within the arid or semi-arid regions. In a general way arid regions are taken as including those having an average annual rainfall of twenty inches or less. Throughout all of this section of the country there are different degrees, in which irrigation is necessary, from a point where, without its use, the land is absolutely uncultivable, to that where, if not irrigated, it may yet produce some return for the labor of the husbandman in the shape of puny and unreliable crops, but nothing like what it could and would do if water were used upon it. There are again other lands which,

¹ See Chaps. 3-10.

² See Chap. 12.

if not irrigated, will still produce the ordinary cereal crops to a more or less uncertain extent, but which, if water be used upon them at appropriate times, are thereby fitted to and will produce much more certain and larger and better crops than without it.¹ This is also true of certain portions of our country within what is known as the humid region. Larger, better, and more certain crops could be produced were the rainfall supplemented by the artificial application of water by way of irrigation.²

§ 240. **States included in the arid and semi-arid regions.**—Generally speaking, the States included within the arid region of the United States are: Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming, and the eastern portions of Oregon and Washington.¹ The States included within the semi-arid region are: Kansas, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas, and the western portions of northern California, and also the western portions of Oregon and Washington.²

Of course, some of these States are more completely arid than others, as for instance, Arizona and New Mexico are more arid than Washington or Oregon. On the other hand, no State can be called wholly arid, as there are spots in each where crops can be raised without irrigation. But in all of the above-named States there are vast tracts of land having a very fertile soil, that for the most part are wholly unproductive on account of the small precipitation. In these regions agriculture is impossible without the aid of irrigation, but with it, it can be made to produce surer crops and of even greater value, than can be produced in the best sections of the humid region. This condition of the arid region, and the imperative necessity for irrigation to render it productive, is

¹ Fallbrook Irr. Dist. v. Bradley, 164 U. S. 112, 41 L. Ed. 369, 17 Sup. Ct. Rep. 56, Rev'g *Id.*, 68 Fed. Rep. 948.

For Ancient Irrigation in the United States, see Secs. 80-85.

² For Supplemental Irrigation, see Sec. 29.

For Irrigation in the Eastern States, see Secs. 257-260.

¹ For the particular features of these States and irrigation therein, see Part XIV, under the respective States.

² For the particular features of these States and irrigation therein, see Part XIV, under the respective States.

a matter of such common knowledge that the Courts judicially take notice that land within this region will not produce agricultural crops without irrigation.³ In the semi-arid region of the great plains, in some years of excessive precipitation, the humid region, which adjoins it on the east, moves westerly toward the foothills of the Rocky Mountains; while, during dry years, the greater part of the great plains west of the Missouri River becomes semi-arid or, for the time being, even arid.

The States above named now have a large population, and this population is rapidly being increased, largely due to the settlement of lands under the various irrigation projects. The country, under modern irrigation methods, is capable of sustaining a population many fold of that which it has at present. It is estimated that these new arid lands will, in the course of another century, sustain inhabitants to the number of nearly the whole of the present population of the United States. The production of this vast region in cereals alone is practically unlimited. And, under the various systems of irrigation to which this entire region, with its numerous streams, great valleys, and plains, is susceptible, it can not only support its own population, but also aid largely in supporting the population of the other portions of the country.

§ 241. The first of modern irrigation in the United States.—With respect to the development of the practice of irrigation and the relative development of the water and irrigation laws and customs, the arid portion of the United States may be divided into three sections. And, chronologically stated, the first in time of settlement comprises the Southern States of Arizona and New Mexico, and portions of California, which were settled by the Spaniards, and especially under the old Spanish missions, as early as the sixteenth century; second, the settlement of Utah and certain portions of the surrounding States by the Mormons, in 1847;

³ Prescott Irr. Co. v. Flathers, 20 Wash. 454, 55 Pac. Rep. 635; Paxton & Hershey Irr. Canal & Land Co. v. Farmers & Merchants' Irr. & Land Co., 45 Neb. 884, 64 N. W. Rep. 343, 29 L. R. A. 853, 50 Am. St. Rep. 585; *In re Madera Irr. Dist.*, 92 Cal. 296, 28 Pac. Rep. 272, 675, 14 L. R.

A. 755, 27 Am. St. Rep. 106; Fallbrook Irr. Dist. v. Bradley, 164 U. S. 112, 41 L. Ed. 369, 17 Sup. Ct. Rep. 56; *Rev'g Id.*, 68 Fed. Rep. 948; *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540; *Mud Creek Irr. Agr. & Mfg. Co. v. Vivian*, 74 Tex. 170, 11 S. W. Rep. 1078.

and, third, the settlement of the Greeley Colony in Colorado, in 1870. Afterward followed various settlements throughout the arid West, down to the present time. The three earliest settlements were entirely independent of each other; and, in the order enumerated above, will be briefly described in the following sections of this chapter.¹ Prior to these settlements, however, irrigation had been largely practiced by the ancient natives, as related in a previous part of this work.²

§ 242. **Settlements by the Spaniards.**—The first settlements in the United States, where what may be termed modern irrigation was practiced, were in the States of California, New Mexico, and Arizona. This portion of the country was first possessed by Spain and afterward by Mexico, and the settlers derived their earliest ideas and methods of irrigation from those countries. The first irrigation practiced by white people was by the Spanish mission fathers in the sixteenth and seventeenth centuries. These fathers, while converting to Christianity and civilizing the Indians, planted and cultivated vineyards, orchards, and farms surrounding the missions. The mission at San Diego, California, was established in 1769, and one of the first things done was to construct a canal or acequia, for the purpose of conveying water to the growing crops and the orchards and vineyards that were planted from seeds and cuttings brought from Mexico. To this day about many of the old missions may be seen the old systems of reservoirs and acequias which were built by the Indians under the instructions of the Catholic missionaries, who had learned the value of irrigation in Mexico, as well as the best manner in which to divert the water from the natural streams and convey it to the point where it was to be used. The methods of irrigation in Spain were peculiarly applicable to the coast region of California and its interior valleys, and also to the valleys of the States of New Mexico and Arizona.¹ Until the coming of the Americans the water laws of this region were those of Spain and Mexico. Under them the waters of a

¹ For Settlement by the Spaniards, see Sec. 242; by the Mormons, Secs. 243-246; and by the Greeley Colony, Sec. 248.

¹ See Irrigation in California, Part XIV; Irrigation in New Mexico, Part XIV; Irrigation in Arizona, Part XIV.

² For Ancient Irrigation in the United States, see Secs. 79-85.

26—Vol. I—Kin. on Irr.

stream were held to be a public trust, title to which could not be granted to any private person or corporation. Permission for use only could be given, and then only to the actual user and to the extent of the amount used.² The laws governing waters and their use for beneficial purposes were based upon the Civil Law, as modified by those of Mexico. And, in these sections of the country there are still in existence many of the old Spanish-Mexican rights owned by individuals, and also the pueblo rights owned by cities and municipalities, which subjects we will discuss in another chapter.³

§ 243. **The Mormons—First settlement.**—There is no question but that modern irrigation, as known in the arid region of the United States by white English speaking people, was begun by the Mormon pioneers in Utah, in 1847. They, by force of circumstances, had been led to make their homes in the very midst of the great arid West. The President of that people, Wilford Woodruff, in his speech before the first Irrigation Congress which met in Salt Lake City on the 15th to 17th of September, 1891, related the circumstances of the practice of the art which has reclaimed so many thousands of acres of barren lands in the West, and is destined to play such an important part in the future of this country. He stated the circumstances of this beginning as follows: "Fifty-one years ago, the twenty-fourth of last July, I entered this valley with one hundred and forty-three emigrants, or in other words, pioneers. We were led by President Young. This country that we arrived upon was called the Great American Desert, and certainly, as far as we could see, it did not deviate from that in the least. We found a barren desert here. There was no mark of the Anglo-Saxon race, no mark of the white man—everything was barren, dry, and desert. We pitched our camp a little to the southeast from here, about eleven o'clock in the day. We had a desire to try the soil, to know what it could produce. Of course, all this company—nearly the whole of us—were born and raised in the New England States, Vermont, Maine, Massachusetts, and

² See Irrigation in Mexico, Secs. 79, 175. For Pueblo Rights, see Secs. 581, 582.

³ For the Civil Law, see Chap. 29, Secs. 552-584.

Connecticut, and had no experience in irrigation. We pitched our camp, put some teams on to our plows, and undertook to plow the earth, but we found that neither wood nor iron was strong enough to make furrows in this soil. It was like adamant; of course we had to turn water on it. We would have done anything. We went and turned out City Creek; we turned it over to our ground. When we came to put our teams upon it, of course, they sank down in the mud. We had to wait until this land dried enough to hold our teams up. We put in our crops and staid here. In the meantime President Young laid out this city, as you see it today, in the midst of sagebrush, without a house within hundreds of miles of us. Now, what I wish to say is this: You gentlemen come here today, you see the city, you go through the country. Here are thousands of miles, I might say, through these mountains filled with cities, towns, villages, gardens, and orchards, and the produce of the earth that sustains the people. Without this water, this irrigation for which you have met here today, this country would be as barren as it was in 1847, as we found it. Whoever occuppies these lands has got to have the water to perform the work. We have had to learn by experience, and all that we have obtained in these mountains has been by irrigation.”

§ 244. **The Mormons—The cause of the settlement and the condition of the country.**—The announced desire of the Mormon pioneers who settled in Utah in 1847 was to get a place so far away from other settlements that they might follow the teachings of their peculiar religion without interference from those not of their faith. The opposition that they had met in Ohio, Missouri, and Illinois had compelled them to take the long journey across the desert among hostile Indians, and finally brought them to the Great Salt Lake Valley. It certainly seemed that they had chosen wisely in their selection. It was then a thousand miles from the nearest settlements on the east, and almost as far from the California settlements on the west. What were considered almost impassable deserts surrounded it on all sides, The only white men who had visited the valleys theretofore were trappers and explorers. It was nominally under the sovereignty of Mexico, but in reality there was no established form of government. They were a law unto themselves for a number of years. At the close of the Mexi-

can War sovereignty passed to the United States, but still no government was established, except that by themselves. In addition to being without established government, the region to which they had come required a kind of agriculture new to what they were accustomed to and new to the kind that was practiced in the then United States. Irrigation engineering and irrigated agriculture were alike unknown to them. More than all this, there was no means of acquiring title to land in the region where they had settled, and what was afterward the Territory of Utah. Owing to these conditions, the Mormon settlers in the valley of the Great Salt Lake were pioneers indeed—settlers in a new country without established government, and requiring a new system of engineering and of agriculture. The absence of laws or established customs left them free to develop their institutions without the necessity of conforming to existing rules; while the church, which exercised authority over both religious and civil affairs, prevented those conflicts over titles to both land and water which would otherwise have arisen.¹

These conditions remained until the settlement became a Territory, and, in 1896, a State, of the Union. The legislatures of both the Territory and State have kept pace with the more modern laws and systems for the government and control of waters; until today the State probably has as perfect a system of laws governing the subjects of waters and water rights as has any State in the country.²

§ 245. **The Mormons—Their policies and success.**—It was thus, on the 24th day of July, 1847, that the science of irrigation, in a somewhat primitive way, was first introduced by English speaking people in the very heart of the arid region of the United States.¹ From that time on, the Mormons realized that they could succeed in making a living and be able to remain in the country by building ditches, and diverting the water of the streams from their natural channels and applying it to the land for irrigation. It was an absolute necessity, and then their bare existence depended

1 See Irrigation in Utah, Secs. 243-246.

For some of the peculiar early Mormon laws, see Part XIV, Utah.

2 For the irrigation and water laws of Utah, see Part XIV.

1 See previous Secs. 243, 244.

upon it, and that, too, regardless of any of the comforts, luxuries, or profits which might thereafter be derived from this use of the water. As time progressed, however, their work along these lines became more systematized, and better methods were obtained, until at the present time the Mormon farmers are generally considered among the best irrigators in the country; and it may be said that they have all the comforts, and many of the luxuries, that can be found in any portion of the West.² Their policy caused them to spread out and to colonize the surrounding sections of the country, and for more than sixty years their settlements have extended for hundreds of miles from the central point at Salt Lake City.³

§ 246. **The Mormons—Co-operative system—Size of farms.**—The cause of the great success of the extensive systems of irrigated agriculture now found in the State of Utah was due mainly to co-operation, which was a dominant principle of the Mormon pioneers. It was beyond the power of one farmer to turn the mountain stream from its natural channel and spread it upon his land. Hence he joined with his neighbors, and, under one head, they constructed a larger ditch than the single individual would have done—in fact, one large enough to irrigate all of their lands. Another cause of success was the selection of a small farm which, with intensive cultivation of diversified crops, always produced a good and substantial living for the settler and his family, and at the same time permitted near neighbors by assembling the farmers' homes in close proximity or in convenient village centers. Thus the farmers were enabled to live in the villages and drive out each day to their farms in the vicinity. The villages were also laid out in large blocks and lots, and every farmer was expected to have his garden and orchard inside of the village. Even Salt Lake City was originally laid out in blocks containing ten acres, which were divided into eight lots of one and one-quarter acres each. Water was furnished for the irrigation of all of these lots without the business district; and throughout all portions of the resident districts today are some of the original lots, which are still culti-

² For the Effect of Irrigation upon the Individual, see Sec. 9.

³ For Irrigation in Utah, see Part XIV.

vated by means of the old water rights acquired during the early days.

In the earlier days, the areas of the cultivated farms were small. This was due largely to the smaller ditches and canals that were then used. During the later years, the average of the cultivated irrigated farms is larger, due undoubtedly to the larger irrigation systems constructed throughout the entire State. This growth is shown by the various census reports as follows: The census of 1890 shows that there were, in 1889, 9,724 irrigated farms, including 263,473 acres, or the size of the average farm was 27 acres; that of 1900 shows that in 1899 there were 17,924 farms, including 629,293 acres, or the size of the average farm was 35.1 acres; that of 1910 shows that in 1909 there were 19,709 farms, including 999,410 acres, or the size of the average farm was 50.2 acres.

And, it must not be understood from the above that the State of Utah now is entirely Mormon and subject to their institutions and church. In many of the farming communities the residents are largely Mormon, but in many others, especially under the newer large irrigation projects, the residents are largely non-Mormon. The different classes of citizens live together in harmony; and, as far as business relations are concerned, one can not be told from the other.

§ 247. The Greeley Colony—The first settlement.—It was not until 1870 that the first co-operative and associated effort in the direction of irrigation outside of Utah was accomplished. However, irrigation had been practiced upon a small scale along the bottom lands in sections of what is now nearly every Western State and Territory prior to that date. Two years after the Mormons had settled in Utah, gold had been discovered in California, and the Overland Trail, with its various branches, had been established. Along this trail various stations had been erected, usually upon the banks of some stream. In the neighborhood of these stations a few settlers established themselves, and by means of simple furrows turned the water upon small patches of land, and by means of these individual efforts they raised certain crops, which were disposed of at high prices to those who were traveling to California in the rush for gold. These efforts were the sum total of all the irrigation enterprises, outside of those by the

Mormons in Utah, until the year 1870, when the Union Colony of Colorado, popularly called the Greeley Colony, was established on the eastern slope of the Rocky Mountains, upon the lands of which the town of Greeley is the center.

§ 248. **The Greeley Colony—Cause of the settlement.**—The settlement of the Mormons in Utah was the result of a religious immigration.¹ The Greeley settlement was the transplanting, in the then far West, of a New England town, originally based somewhat upon socialistic, or rather, communistic ideas. Nathan Cook Meeker was the father of this new enterprise, which was to mark the beginning of a new and different industrial development in Colorado. The place of its organization, strange as it may seem, was New York City. At the close of the war, Mr. Meeker was the agricultural editor of the *New York Tribune*. In 1868 he was commissioned by Horace Greeley to take a trip to the far West, and to give the readers of the *Tribune* a detailed description of the industrial system of the Mormons in Utah. Arriving at Cheyenne in the winter time, and heavy snows having fallen, he was compelled to defer his visit to Utah, and, instead, went south into Colorado. He remained in Colorado until the following fall, studying the situation, and then returned to New York City. During the summer of 1869, undoubtedly influenced by the reports of Mr. Meeker, Mr. Greeley visited Colorado and was at once interested in the conditions and possibilities of the country, and gave the proposition his personal support, as well as the backing of his powerful paper, and from that time on the call was, "Go West, young man." A few friends were got together and the enterprise was launched.

The issue of December 14, 1869, of the *New York Tribune* published a prospectus of the scheme, as well as an editorial endorsement written by Mr. Greeley himself. The result was somewhat unexpected to the promoters themselves. In response to the announcement several hundred people met at the Cooper Institute in New York in mass meeting, at which Horace Greeley presided, and organized the "Union Colony of Colorado," the technical name given to the company; a name, by the way, that has never been followed, in popular parlance at least, as it has always been known

¹ For Settlement by the Mormons, see Secs. 243, 244.

as the Greeley Colony. The actual settlement of the colony was made in the spring of 1870, under the personal direction of Mr. Meeker. A committee had previously selected twelve thousand acres of railroad and government land, and when the settlers arrived everything was ready to begin operations. The first thing done was to establish a town and name it after the great sponsor of the enterprise, Greeley. The next thing, and as quickly as possible, was to construct a ditch on the south side of the creek, on the site of the one that now irrigates the lots in the town. Thus started the agricultural development of the State of Colorado. Without following the failures and eventual success of these settlers further, we will only add that the founding of the Greeley Colony marked the beginning of a new and different industrial development in Colorado, which had formerly been given over to the miner, the cattleman, the hunter, and the Indian.²

Many scientific experiments were made by the colonists, and the best methods, both for irrigation and cultivation, were sought out. The homes and civic institutions of the colony became the pride of the State, and its success inspired numerous undertakings of a similar character not only in the State of Colorado, but in other portions of arid America.

§ 249. **The Anaheim Colony, California.**—Early in the history of modern irrigation in California is the Anaheim Colony, which, about forty years ago, settled upon a body of land on the Santa Ana River, about twenty-five miles southeast of Los Angeles. This colony, co-operative in its inception, was composed of a party of Germans living in the city of San Francisco. They were all small tradesmen, mechanics, and laborers, and their small savings composed the capital that started the enterprise. Under the rules of the association each person, to become a member, paid the sum of \$100, and further contributions in small monthly installments. This money was placed in a common fund and used for the purchase and improvement of a large tract of land. A part of the

² See Water-Supply and Irrigation Papers of the United States Geol. Survey No. 9; Irrigation Near Greeley, by David Boyd.

See, also, The Conquest of Arid

America, by William E. Smythe, 1900, Chap. 2; Irrigation Institutions, by Elwood Mead, 1903, pp. 44, 45.

See, also, Irrigation in Colorado, Part XIV.

colony was sent on in advance to build the irrigation canals. The whole tract was then divided into twenty-acre farms to each member of the association, and planted by the advance guard in orchards and vineyards. The main body, in the meantime, remained in San Francisco and worked at their various occupations and thus earned the money that sustained the work in the field. Later, when the land was prepared for occupancy, the settlers came with their families, built their houses on their various tracts, and from that time on, worked their land as private property, and only the irrigation canals remained the property of the association. Cooperation, however, had served its purpose in enabling the settlers to obtain their land at first cost, and to have it improved and planted in the advance of their coming to occupy them. The community was thoroughly successful from the start, and demonstrated what could be done by means of intensive cultivation by means of irrigation. The success of the colony worked a revolution in the character of the people. Prior to the time of the settlement that section of the country had been a region of great ranches, where the cattle industry and the raising of grain had held complete sway. All this gave way to the small farm intensively cultivated, fruit trees, and vineyards. The success of this colony also led to the foundation of many other colonies throughout the State of California.¹

§ 250. **Riverside Colony, California.**—In the year 1871 the Riverside Colony settled upon lands about seventy miles east of Los Angeles. The enterprise originated with Judge North of Knoxville, Tennessee, and, like most of the pioneer settlements, was composed of comparatively poor men. It was originally co-operative in its design, but later departed from that plan. About one hundred families were secured who could invest the sum of one thousand dollars for the purchase of land, and these were also joined by many industrious families who could invest a smaller amount. Land was first purchased from a Mexican, who owned one of the large sheep ranches in the vicinity, at the price of two dollars

¹ See *The Conquest of Arid America*, by William E. Smythe, 1900, Chap. 3; *Irrigation Institutions*, Mead, 1903, p. 45. For *Irrigation in California*, see Part XIV.

and a half an acre. The conditions were such that it required considerable money to take the water from the Santa Ana River and carry it to the land; in fact, the first canal required the sum of fifty thousand dollars to construct. Fortunately, the money was available, and the original canal was completed in the spring of 1871. The enterprise at this time resolved itself into a private corporation, owning both the land and the water. The land was now sold by the corporation to the settlers for the sum of twenty-five dollars per acre. This also included the right to purchase a certain amount of water per acre, for which there was also an annual charge for maintenance. From the first start the settlement of Riverside thrived, and it was destined to become the pioneer orange colony of California. In no other place in the United States have farm lands advanced in value as they have in Southern California. From a few dollars per acre, lands in the Riverside Colony have advanced to one thousand and even two thousand dollars per acre, and some years have earned a profit of fifty per cent on the higher figure. Many other colonies have settled in various parts of California, and, following the example set by the Anaheim and Riverside Colonies, have been very successful, until California has become noted not only for its mines, but also for its fruit and diversified farm industries.¹

Without going into the details of other settlements throughout the arid West, we will now take up the subject of the growth of irrigation throughout the whole country.

§ 251. Growth of irrigation, 1847-1880.—It was a notable epoch in the development of the West when the Mormons settled in Utah and scattered their colonies from that point north, into Idaho, Wyoming, and Montana, and even into Canada, and south into New Mexico and Arizona, and also into Old Mexico. When the Mormons entered Salt Lake Valley in July, 1847, there were probably not more than a few hundred acres irrigated in what is now within the boundaries of the United States. These lands were irrigated by Indians, Mexicans, and at the California missions.¹

¹ See *Irrigation in California; The Conquest of Arid America*, by Smythe, 1900, Chap. 3; *Irrigation Institutions*, by Mead, 1903, p. 45; U. S.

Dept. of Agriculture, Experiment Stations Bulletin No. 100.

¹ See *The Mormons*, Secs. 243-246.

Another important epoch occurred when, twenty-three years after the Mormon settlement, the Greeley Colony was founded in Northern Colorado. The wonderful results shown by the Mormon communities, and the ultimate success attained by the Greeley Colony, attracted public attention and greatly stimulated the colony idea. As a consequence, between the years of 1870 and 1880, many organizations were formed for the purpose of bringing people in large bodies from the Eastern States, and even from Europe, and placing them upon small farms in various sections of the arid West. These farms, in the respective sections, were located near each other and supplied with water from a common ditch. Individual settlers throughout various parts of the country have also, by their own efforts, brought considerable tracts of land under irrigation, and thus, at many widely scattered points, and under different conditions, the science of irrigation has been introduced. There are no statistics concerning the area irrigated in 1870, but it is probable that in that year there were not more than 20,000 acres under irrigation in the whole of the United States.

From 1870 to 1880 there was an era of rapid development, mostly by means of small ditches, constructed by individuals and associations of farmers, so that at the end of 1880 there were probably over 1,000,000 acres under irrigation, but still there were no statistics upon the subject. Up to this period the United States Government had not considered the subject of sufficient importance to collect the data upon the subject and publish the same in its census of 1880.²

§ 252. **Growth of irrigation (continued), 1880-1890.**—Up to the year 1880 co-operative associations in irrigation enterprises had predominated. The success of these institutions throughout the West led to a wild rush of speculative enterprise similar in character to the mad rush to California for gold in the year 1849. It was during the decade from 1880 to 1890 that this "boom" in irrigation enterprises occurred. Large sums of money were obtained for irrigation works throughout different portions of the arid West by the sale of stocks and bonds, and great enterprises were launched, enormous reservoirs were projected, and canals of upward of one hundred miles in length planned, and, in some cases, built. Nearly

² See United States Census, 1900, Part II, Agriculture, p. 801.

all of the large enterprises constructed during this period failed financially, and, although they aided in the extension of irrigation, they did not at that time enrich the investors. The main cause of this failure, in our opinion, was the failure of the promoters to secure settlers enough to permit of success. Many enterprises were started that were *bona fide* in character, having large tracts of land under their control and sufficient water to irrigate the same, and ample money borrowed to finance the project; and yet, in many cases, there was the most abject failure. The prospectuses of these companies stated that the settler could secure the land for such a sum per acre, that the water right could be secured for a certain sum, and knowing the number of acres that could be watered from the projected works and the company having control of both, it seemed simple enough to compute large profits to the investors. But many of these works, although possessing great merit, were failures because there were so many of them projected during the same period throughout the country that there were not settlers enough in the whole country willing to undergo the hardships of pioneer life to supply all of these enterprises. And it was from the settlers that these companies expected to obtain their revenue, and when these did not come, of course there was no revenue. Afterward many of these works were foreclosed by the bondholders or mortgagees and started again upon a new basis and have since succeeded, but the loss to the stockholders was a total one.

During the same decade of 1880-1890 there were other elements which entered into irrigation development and tended to give them a backset. These were the wild-cat projects promoted by "boomers," and absolutely having no merit, and those irrigation projects, which had some merit, but had not been carefully thought out or engineered. Of course, with the failure of the *bona fide* projects these "bubbles" burst, with the result that not only the stockholders lost everything, but also the bondholders and mortgagees, and the settlers as well. For in many instances the settlers were induced to move upon the land before the works were completed, or were only imperfectly completed; and, of course, the failure to get the water upon the land at the time promised by the company was ruination. to the settlers already upon the land and prevented others coming.

Fortunately for the country, and especially for the West, these times have passed, and from 1890 to the present, irrigation develop-

ment has progressed rapidly and upon a more substantial basis than were those projects mentioned above, which were launched during the decade of 1880-1890. However, we must not be understood as inferring that all of the projects launched during that period were bad, as they were not. Many of these enterprises survived all financial difficulties of those particularly critical years for these projects, and are now in existence and prospering as well as are the settlers who took up lands under them.

About the year 1890 the respective States, and the Territories also, took up the question in their legislatures, and enacted better laws for the government and distribution of the waters within their respective jurisdictions, better laws for the protection of the investors in these projects, and better laws for the protection of the settlers who settled under them. And, while these laws have been improved upon later, they, at that time, practically eliminated from these propositions the "boom" and "wild-cat" elements.

§ 253. **Growth of irrigation (continued)**—The eleventh census of 1890.—The eleventh census of the United States, published in 1890 was the first to devote attention to irrigation matters, and the statistics obtained show that in 1889 there were 3,631,381 acres irrigated on 54,136 farms in the arid region, with an average irrigation area of 67 acres per farm. This was divided among the several states of the arid region as follows:¹

| States and Territories | Number of Irrigators in 1889 | Area irrigated in 1889, in acres | Average size of irrigated farms in acres, in 1889 |
|------------------------|------------------------------------|--|---|
| Arizona | 1,075 | 65,821 | 61 |
| California | 13,732 | 1,004,233 | 73 |
| Colorado | 9,659 | 890,735 | 92 |
| Idaho | 4,323 | 217,005 | 50 |
| Montana | 3,706 | 350,582 | 95 |
| Nevada | 1,167 | 224,403 | 192 |
| New Mexico..... | 3,085 | 91,745 | 30 |
| Oregon | 3,150 | 177,944 | 56 |
| Utah | 9,724 | 263,473 | 27 |
| Washington | 1,046 | 48,799 | 47 |
| Wyoming | 1,917 | 229,676 | 119 |
| Sub-humid Region..... | 1,552 | 66,965 | 43 |
| Total..... | 54,136 | 3,631,381 | 67 |

¹ United States Census, 1890, Agriculture by Irrigation, p. 1.

It will be noticed that the average of the irrigated farms in Utah is the smallest, having but 27 acres, and the average for Nevada is the largest, having 192 acres.

In the semi-arid or subhumid region, which lies within the Great Plains east of the Rocky Mountains, statistics were also taken in the census of 1890 of the land under irrigation. There were in 1889 under irrigation 66,965 acres irrigated on 1,552 farms, with an average irrigated area of 43 acres per farm. This was divided among the several states of the semi-arid region as follows:²

| States | Number of Irrigators in 1889 | Area irrigated in 1889, in acres | Average size of irrigated farms in acres, in 1889 |
|-------------------|------------------------------------|--|---|
| North Dakota..... | 7 | 445 | 64 |
| South Dakota..... | 189 | 15,717 | 83 |
| Nebraska | 214 | 11,744 | 55 |
| Kansas | 519 | 20,818 | 40 |
| Texas | 623 | 18,241 | 29 |
| Total..... | 1,552 | 66,965 | 43 |

The above table shows in a general way an increase in the number of irrigators and in the acreage irrigated from north to south, which is due largely to the fact that conditions of summer aridity increase with the lower latitudes, and also to the greater density of population and more easily available water supply toward the south.

Omitting the subhumid states, in which irrigation at that time was considered exceptional, and confining the statistics to the States of the arid region where irrigation was a necessity, there were in 1889, 3,564,416 acres irrigated. This was almost exactly one-half of one per cent of the total land area of the States and Territories within the arid region and where irrigation was commonly practiced. The largest percentage by States was found in Colorado, reaching 1.34 per cent, and the smallest percentage irrigated among the arid States and Territories was in Arizona, where the area was less than one-tenth of one per cent.³

The area irrigated by artesian wells in 1889 and included in the totals set forth in the above tables was 51,896 acres. This was but

² United States Census, 1890, Agriculture by Irrigation, p. 2.

³ United States Census, 1890, Agriculture by Irrigation, p. 2.

1.429 per cent of the total of the irrigated land for that year. The number of wells, the area irrigated in each State and Territory, appear in the following table:⁴

| States and Territories | Total Number | Average depth in feet | Average disch. in gal. per minute | —Wells used in Irrigation— | |
|------------------------|--------------|-----------------------|-----------------------------------|--|-------------------------------|
| | | | | Average area irrigated per well in acres | Total area irrigated in acres |
| *Arizona ..... | ..... | ..... | ..... | ..... | ..... |
| California | 3,210 | 248.00 | 164.00 | 18.63 | 38,378 |
| Colorado | 596 | 250.00 | 39.00 | 18.01 | 6,213 |
| Idaho | 28 | 83.00 | 11.00 | 13.21 | 185 |
| Kansas | 59 | 202.00 | 44.00 | 13.71 | 329 |
| Montana | 14 | 366.00 | 28.00 | 3.00 | 18 |
| Nebraska | 91 | 247.00 | 13.00 | 1.00 | 7 |
| Nevada | 33 | 215.00 | 6.00 | 1.00 | 20 |
| North Dakota..... | 461 | 196.00 | 21.00 | 2.00 | 20 |
| Oregon | 6 | 70.00 | 15.00 | 4.00 | 12 |
| South Dakota..... | 527 | 216.00 | 51.00 | 6.68 | 474 |
| Texas | 534 | 292.00 | 19.00 | 3.00 | 438 |
| Utah | 2,524 | 146.00 | 26.00 | 4.73 | 5,802 |
| Washington | 9 | 127.00 | 89.00 | ..... | ..... |
| Wyoming | 5 | 210.00 | 8.00 | ..... | ..... |
| Total..... | 8,097 | 210.41 | 54.43 | 13.21 | 51,896 |

*No data.

§ 254. Growth of irrigation (continued), 1890-1900.—The twelfth census of 1900.—During the following decade, 1890 to 1900, the irrigated acreage in the United States doubled in extent. This was due not only to the construction of many new works, but also to the extension and enlargement of many canals already existing in 1889, and to the more complete irrigation of the lands then under ditch. The twelfth census of the United States, published in 1900, shows that in 1899 there were 7,263,273 irrigated acres on 102,819 farms in the arid region, with an average area of 70.64 acres per farm. The following table will show the division of the land among the several States and Territories, the amount irrigated from streams and wells and the percentage of increase as compared with the area irrigated in 1889: ¹

⁴ United States Census, 1890, Agriculture by Irrigation, p. 8.

¹ United States Census, 1900, Agriculture, Part II, p. 820. The above

table is for lands exclusive of Indian reservations, for which lands see Secs. 271-285.

| States or Territories | Number of Irrigators 1889 | Acreage 1899 | | Total 1899 | Total 1889 | Per cent increase |
|-----------------------|---------------------------------|-----------------|---------------|------------|------------|----------------------|
| | | From streams | From wells | | | |
| Arizona | 2,981 | 184,422 | 974 | 185,396 | 65,821 | 181.7 |
| California . . . | 25,611 | 1,293,366 | 152,506 | 1,445,872 | 1,004,233 | 44.0 |
| Colorado | 17,613 | 1,604,213 | 7,058 | 1,611,271 | 890,735 | 80.9 |
| Idaho | 8,987 | 602,324 | 244 | 602,568 | 217,005 | 177.7 |
| Montana | 8,043 | 951,154 | ..... | 951,154 | 350,582 | 171.3 |
| Nevada | 1,906 | 504,034 | 134 | 504,168 | 224,403 | 124.7 |
| New Mexico.. | 7,884 | 202,889 | 1,004 | 203,893 | 91,745 | 122.2 |
| Oregon | 4,636 | 388,111 | 199 | 388,310 | 177,944 | 118.2 |
| Utah | 17,924 | 624,186 | 5,107 | 629,293 | 263,473 | 138.8 |
| Washington.. | 3,513 | 133,698 | 1,772 | 135,470 | 48,799 | 177.6 |
| Wyoming | 3,721 | 605,232 | 646 | 605,878 | 229,676 | 163.8 |
| Total | 102,819 | 7,093,629 | 169,644 | 7,263,273 | 3,564,416 | 103.8 |

A comparison of the number of irrigators and of the number of acres irrigated, at the beginning and end of the decade of 1889-1899, shows that they both have approximately doubled. The number of irrigators in the arid States increased from 52,584 in 1889 to 102,819 in 1899, or 95.5 per cent;² and the number of acres increased from 3,564,415 to 7,263,273, or 103.8 per cent. The average size of the irrigated farm increased from 67 acres in 1889³ to 70.64 in 1899. This increase is explained by the irrigation during those years of large areas on ranches, in forage crops and pasture. In the more thickly populated States, the number of irrigators increased more rapidly than the area brought under cultivation, showing a more marked tendency toward the subdivision of large irrigated tracts, and the cutting up of these into smaller farms devoted to fruit raising, garden, and general farming rather than the raising of forage crops.

In the semi-arid States and Territories the land irrigated shows a much larger percentage of increase in 1899 over the year 1889 than is shown in the arid region. There were in 1899 in this region 273,117 acres on 4,970 farms, with an average irrigated area of 54.95 acres per farm. This was divided among the several States of the semi-arid region as follows:⁴

² For the number of irrigators in 1889, see Sec. 253.

³ See Sec. 253.

⁴ United States Census, 1900, Agri-

culture, Part II, p. 867. The above table is of lands exclusive of Indian reservations, for which lands see Secs. 271-285.

| States | Number of Irrigators 1899 | Acreage 1899 | | Total 1899 | Total 1889 | Per cent increase |
|---------------|---------------------------------|-----------------|---------------|------------|------------|----------------------|
| | | From streams | From wells | | | |
| Kansas | 929 | 21,711 | 1,909 | 23,620 | 20,818 | 13.5 |
| Nebraska ... | 1,932 | 147,695 | 843 | 148,538 | 11,744 | 1,164.8 |
| N. Dakota.... | 54 | 4,815 | 57 | 4,872 | 445 | 994.8 |
| Oklahoma ... | 124 | 2,620 | 139 | 2,759 | ..... | ..... |
| S. Dakota.... | 606 | 38,453 | 5,223 | 43,676 | 5,717 | 177.9 |
| Texas | 1,325 | 49,267 | 385 | 49,652 | 18,241 | 172.2 |
| Total.... | 4,970 | 264,561 | 8,356 | 273,117 | 66,965 | 307.8 |

Therefore the total acreage in the arid and semi-arid regions as reported in the twelfth census was 7,263,273 acres in the arid States and 273,117 in the semi-arid States, making a total of 7,536,390 acres. In addition to this there were reported 3,155 acres irrigated in the humid States, making a grand total of 7,539,545 acres under irrigation in the whole of the United States in 1899.⁵

It will be noticed in the table above that there was a rapid increase during the ten years ending with 1899 of the lands irrigated in the semi-arid region, the area irrigated in the latter year being more than three times as large as that watered in 1889. The rate of increase in the number of irrigators was not so large.⁶

It will also be noticed that the amount irrigated from wells was increased over three-fold in 1899 to that irrigated in 1889, the total acreage irrigated in the arid and semi-arid regions in 1889 being 51,896 acres; and in 1899 the acreage for the arid region being 169,644, and 8,356 for the semi-arid region, making a total of 178,000 acres in 1899.

Up to the year 1899 all the works were constructed and the water diverted from the streams entirely by private enterprise, no Government or State aid having been given up to that time, except that indirectly given by the Government through the Carey Act, which will be discussed in a later section.⁷

§ 255. Growth of irrigation (continued), 1900-1910.—During the decade of 1900-1910 the growth of irrigation in this country

⁵ Vol. 6, Agriculture, Part II, Twelfth Census Report, 1900, p. 819.

See, also, for Irrigation in the Humid States, Secs. 257-264.

⁶ See Sec. 255.

⁷ See Carey Act, Chap. 67.

27—Vol. I—Kin. on Irr.

There is another possible exception, and that is in the State of Colorado, although no data are available. For State aid to irrigation enterprises, and for works constructed by the State of Colorado, see Part XIV.

exceeded any other previous decade. According to the preliminary census results of the thirteenth census, the number of farms irrigated in 1909 in the arid and semi-arid States was 157,862, as against 107,716 in 1899, or an increase of 46.6 per cent. The total number of acres irrigated in 1909 in the arid and semi-arid States was 13,739,499, as against 7,527,690 acres in 1899, or a total increase of 6,211,809 acres, or 82.5 per cent during the decade. It will be noticed that the thirteenth census report disregards the old classification of arid and semi-arid States and includes the States formerly in the semi-arid region in the previous census as "arid States." The cause of this great increase was largely due to the acreage brought under cultivation under the National Reclamation Service, extensions and new projects under the Carey Act, and extensions and new districts under State irrigation district laws.

There is also a very significant fact reported by the thirteenth census, and that is that enterprises already constructed, capable of supplying water for irrigation in 1910, were placed at 19,335,711 acres. The area included in all projects constructed and projected, but not entirely constructed, is placed at 31,112,110 acres. This indicates that the growth of irrigation in this country for the next two decades at least will increase in about the same ratio that it increased during the last decade.

§ 256. The thirteenth census of 1910.—Under the classification made by the thirteenth census for 1910, including the semi-arid with the arid States, is to be found the following:

Table 5—Acreage Irrigated in 1909, Classified by Type of Enterprise:
Arid States.

| State | Total | United States Reclamation Service | United States Indian Service | Carey Act |
|------------------------------|-------------------|---|------------------------------------|----------------|
| Arid States..... | 13,739,499 | 395,646 | 172,912 | 288,553 |
| Arizona | 320,051 | 138,364 | 19,386 | ..... |
| California | 2,664,104 | 400 | 3,490 | ..... |
| Colorado | 2,792,032 | 16,600 | 1,020 | 485 |
| Idaho | 1,430,848 | 47,500 | 3,426 | 162,418 |
| Kansas | 37,479 | 6,953 | ..... | ..... |
| Montana | 1,679,084 | 14,077 | 67,417 | 9,648 |
| Nebraska | 255,950 | 30,536 | 300 | ..... |
| Nevada | 701,833 | 30,000 | 2,597 | ..... |
| New Mexico..... | 461,718 | 13,398 | 24,007 | ..... |
| North Dakota..... | 10,248 | 1,610 | ..... | ..... |
| Oklahoma | 5,402 | ..... | ..... | ..... |
| Oregon | 686,129 | 22,000 | 429 | 24,750 |
| South Dakota..... | 63,248 | 5,613 | 50 | ..... |
| Texas (exclusive of rice). . | 164,283 | ..... | ..... | ..... |
| Utah | 999,410 | ..... | 11,520 | 5,000 |
| Wyoming | 1,133,302 | 12,905 | 4,270 | 86,252 |
| Washington | 334,378 | 55,690 | 35,000 | ..... |

Table 5—Continued.

| State | Irrigation Districts | Co-operative Enterprises | Commercial Enterprises | Individual and Partnership Enterprises |
|------------------------------|-------------------------|-----------------------------|---------------------------|--|
| Arid States..... | 533,142 | 4,646,039 | 1,444,806 | 6,258,401 |
| Arizona ..... | ..... | 101,025 | 80 | 61,196 |
| California | 173,793 | 779,020 | 746,265 | 961,136 |
| Colorado | 115,304 | 1,273,141 | 159,457 | 1,226,025 |
| Idaho | 140,930 | 628,102 | 44,872 | 403,600 |
| Kansas ..... | ..... | 27,372 | ..... | 3,154 |
| Montana | 4,912 | 329,426 | 62,544 | 1,191,060 |
| Nebraska | 76,448 | 78,605 | 24,834 | 45,227 |
| Nevada ..... | ..... | 78,966 | 8,864 | 581,406 |
| New Mexico..... | ..... | 264,411 | 15,600 | 144,212 |
| North Dakota..... | ..... | ..... | ..... | 8,638 |
| Oklahoma ..... | ..... | 2,000 | ..... | 3,402 |
| Oregon | 1,500 | 149,985 | 77,387 | 410,078 |
| South Dakota..... | ..... | 13,601 | 6,300 | 37,684 |
| Texas (exclusive of rice). . | ..... | 41,186 | 73,440 | 49,657 |
| Utah | 8,455 | 681,760 | 70,227 | 222,448 |
| Washington ..... | ..... | 81,122 | 66,911 | 95,655 |
| Wyoming | 11,800 | 116,317 | 87,935 | 813,823 |

In the same States as above named it is also reported that the acreage enterprises already constructed were capable of irrigating in 1910 under the above classifications as follows: Total, 19,335,711; under the United States Reclamation Service, 786,190; United States Indian Service, 376,576; Carey Act, 1,089,677; Irrigation Districts, 804,951; Co-operative Enterprises, 6,194,677; Commercial Enterprises, 2,416,516, and under Individual and Partnership Enterprises, 667,124 acres.

And in the same States the acreage included in enterprises already constructed or under construction in 1910 classified by the same type of enterprise as above is reported as follows: Total, 31,112,110; United States Reclamation Service, 1,973,016; United States Indian Service, 879,068; Carey Act, 2,573,874; Irrigation Districts, 1,589,865; Co-operative Enterprises, 8,845,437; Commercial Enterprises, 5,096,337; Individual and Partnership Enterprises, 10,154,513 acres.

Table 8—Acreage Irrigated, 1909, Classified by Source of Water Supply: Arid States.

| State | Total | Streams | | Wells | |
|-------------------------|------------|------------|---------|---------|---------|
| | | Gravity | Pumped | Flowing | Pumped |
| Arid States..... | 13,739,499 | 12,783,121 | 157,728 | 125,590 | 308,043 |
| Arizona | 320,051 | 300,067 | 7,711 | 1,489 | 6,096 |
| California | 2,664,104 | 2,235,067 | 29,965 | 55,818 | 276,595 |
| Colorado | 2,792,032 | 2,745,035 | 13,248 | 5,171 | 3,111 |
| Idaho | 1,430,848 | 1,383,718 | 18,685 | 1,172 | 705 |
| Kansas | 37,479 | 35,469 | 20 | 2 | 1,959 |
| Montana | 1,679,084 | 1,624,656 | 7,963 | 207 | 55 |
| Nebraska | 255,950 | 254,105 | 18 | ..... | 139 |
| Nevada | 701,833 | 661,299 | 463 | 150 | 37 |
| New Mexico..... | 461,718 | 397,059 | 1,533 | 48,877 | 5,952 |
| North Dakota..... | 10,248 | 7,153 | 1,614 | ..... | 1 |
| Oklahoma | 5,402 | 5,219 | 50 | ..... | 69 |
| Oregon | 686,129 | 643,281 | 3,585 | 155 | 1,305 |
| South Dakota..... | 63,248 | 47,122 | 540 | 1,448 | 8 |
| Texas (excl. of rice).. | 164,283 | 75,496 | 59,149 | 3,710 | 6,199 |
| Utah | 999,410 | 954,800 | 2,559 | 4,100 | 300 |
| Washington | 334,378 | 301,341 | 9,085 | 3,227 | 5,437 |
| Wyoming | 1,133,302 | 1,112,234 | 1,540 | 64 | 75 |

Table 8—Continued.

| State | Reservoirs | Lakes | | Springs | Total irrigated with pumped water |
|---------------------------|---------------|---------------|---------------|----------------|-----------------------------------|
| | | Gravity | Pumped | | |
| Arid States..... | 98,193 | 58,121 | 12,517 | 196,186 | 478,288 |
| Arizona | 487 | 570 | ..... | 3,631 | 13,807 |
| California | 16,410 | 15,896 | 2,574 | 31,779 | 309,134 |
| Colorado | 16,091 | 422 | 634 | 8,320 | 16,993 |
| Idaho | 732 | 4,622 | 1,535 | 19,679 | 20,925 |
| Kansas | 2 | ..... | ..... | 27 | 1,979 |
| Montana | 22,614 | 5,617 | 5 | 17,967 | 8,023 |
| Nebraska | 1,002 | ..... | ..... | 686 | 157 |
| Nevada | 138 | 500 | 406 | 38,840 | 906 |
| New Mexico..... | 1,272 | 862 | ..... | 6,163 | 7,485 |
| North Dakota..... | 1,280 | ..... | ..... | 200 | 1,615 |
| Oklahoma | 20 | 28 | ..... | 16 | 119 |
| Oregon | 3,279 | 22,915 | 821 | 10,788 | 5,711 |
| South Dakota..... | 13,535 | 200 | ..... | 395 | 548 |
| Texas (exclusive of rice) | 6,203 | ..... | 458 | 13,068 | 65,806 |
| Utah | 568 | 1,671 | ..... | 35,412 | 2,859 |
| Washington | 299 | 4,698 | 6,084 | 4,207 | 20,606 |
| Wyoming | 14,261 | 120 | ..... | 5,008 | 1,615 |

It is also reported that in the States above named there were irrigation works constructed as follows, to wit: Number of independent enterprises, 54,669; total length of ditches, 125,615 miles; of this 87,336 miles were main ditches, and 38,279 miles were laterals. There were also 6,933 reservoirs, having a capacity in acre-feet of 12,872,256. Also there were 5,070 flowing or artesian wells and 14,544 pumped wells used for irrigation. The number of pumping plants is stated at a total of 13,951, with an engine capacity of 207,241 horse-power, and capable of pumping 9,918,755 gallons per minute.

The cost of irrigation enterprises in the same States is set forth as follows: Total cost, 1910, \$304,699,450, as against \$67,482,261 in 1899, and \$29,611,000 in 1889, showing an increase of 127.9 per cent in 1899 over 1889, and the total amount of increase in 1910 as against 1899 was \$237,217,189, or 351.5 per cent.

In the same States it is shown that the average cost of irrigation enterprises per acre served, based on the acreage irrigated in 1909, was \$22.18; based on the acreage enterprises were capable of irrigating in 1910 was \$15.76 per acre. In 1899 it was \$8.89 per acre, and in 1889 it was \$8.15 per acre.

The average cost per acre for operation and maintenance for the years 1889 was \$1.07; 1899, \$0.38; 1909, \$1.07.

The per cent of acreage irrigated represented by different types of water rights in the States named is given as follows: Riparian rights, 2.1; appropriation and use, 34; notice filed and posted, 16.2; adjudicated rights, 35.3; permits from States, 6.7; certificates from States, 5.7.

§ 257. **Irrigation in the humid States.**—There are a great many farmers who place dependence upon irrigation even in the humid portion of the United States. The exact number of these and the acreage irrigated have been somewhat difficult to ascertain, for the reason that irrigation is so widely practiced in a small way that it is almost unknown by this term. In nearly every city, town, village, and well-settled suburb of the country the watering of lawns and gardens is carried on as a matter of course. However, as a general thing, the people do not designate this as irrigation, yet such is the case. Sometimes the line between watering in this way and the systematic irrigation of larger fields is very difficult to draw, and thousands of instances of watering of market gardens, even of considerable size, are overlooked simply because this operation is not designated as irrigation. The distinction between sub-irrigation and drainage is also one which is very difficult to make.¹ Many lands in the humid region which are low and naturally too wet for successful tilling have been made productive by systems of drains. These are operated in such a way that they serve to irrigate the land by subsurface means; the drains are checked in times of drought to hold up the water, and give more moisture to the lands, and are opened wide to drain away superfluous moisture. This is in effect a method of irrigation that is practiced in nearly all of the central humid States. In a number of the humid States there are regular systems of ditch drainage. These systems are used as an adjunct of the rainfall. There is no State in the Union but that at times in the summer there are long spells of continued drought. During these periods the irrigation systems are used as a sort of insurance for the maturity of the crops. That this is a wise provision has been proven for many reasons.²

§ 258. **Irrigation in the humid States (continued.)**—According to the popular conception, the field for irrigation is only the arid or

¹ For Sub-Irrigation, see Sec. 36.
For Drainage, see Sec. 38.

² For Supplemental Irrigation, see
Sec. 29.

semi-arid region in the western portion of this country, and does not extend to the humid States of the eastern and central portion of the country, where the supply of moisture is considered sufficient for the growth of crops. The distribution of the rainfall is so uncertain throughout the humid portion of the country that crops in this region often suffer from drought. The distribution of rain is by no means uniform, even in adjoining counties, and in certain localities, owing to the topography, certain lands fail to receive many of the showers which fall on the surrounding country. Sometimes the rain falls too plentifully and the ground is flooded, and at other times for long spells there is no rain at all, and unless irrigation is used in some method many of the crops, especially garden truck and small berries, are burnt up and entirely lost. It is not uncommon to see farmers making frantic efforts to save their crops from destruction by hauling water and sprinkling from barrels and watering pots. The water applied in this manner is too small in quantity to be of any service and very costly. Therefore as a result of this condition, and following somewhat the example set in the West, in many portions of the humid East are to be found quite a number of economical and successful methods of irrigation adapted to humid conditions.

In the humid region the advantages to be gained from irrigation are limited to certain crops. Such field crops as timothy, clover, wheat, rye, oats, and corn are not particularly affected by droughts of short duration. The value of such crops will usually lie between \$15 and \$30 per acre, and an extensive system of irrigation would hardly pay. In the case of truck crops it is entirely different. The value of a single crop will often be \$200 to \$1,500 per acre, and usually two or three crops are raised in a season. Failure to provide sufficient moisture during any continued period of hot weather may result in great damage to the crop. Irrigation also matures these crops earlier, when they will bring the best prices.

In addition to the truck gardens there are in many localities in the humid region in which there are low meadows lands which may be cheaply irrigated, and these two types of irrigation constitute the present field for irrigation in the humid East. From investigations by the Department of Agriculture of the Government of 125 irrigated meadows in four counties in Pennsylvania, it was found that the total area covered something over 800 acres, showing that

meadow irrigation was a well established practice in that region. And in 41 cases where an estimate of the yield from 270 acres not irrigated is compared with the same number of cases and the same acreage of irrigated land, it was found that the irrigated land produced 570 tons, and the non-irrigated land 270 tons, thus showing that irrigation fully doubles the yield.¹

From investigations of the Government and the data furnished by the reports relative to irrigation in the humid States it seems that the irrigation of meadows and truck farms is an established and profitable practice in the humid States, while the irrigation of field crops is not practiced to any great extent.

§ 259. **Irrigation in the humid States (continued)**—Twelfth census, 1900.—The twelfth census was the first in which any attempt was made to ascertain the number of irrigators and the acreage irrigated in the humid region. And the result of these statistics for the year 1899 shows that the number of irrigators in the Eastern humid States were 429, the acreage irrigated 3,155, the cost of the systems \$288,681, and the value of the products produced on these lands was \$426,805. These were divided among the Eastern humid States as follows: ¹

| States | Number of Irrigators | Acreage irrigated | Cost of systems | Value of products |
|---------------------|----------------------------|----------------------|--------------------|----------------------|
| Connecticut | 56 | 471 | \$ 16,113 | \$ 9,925 |
| Florida | 180 | 1,538 | 232,388 | 302,870 |
| Maine | 11 | 17 | 2,170 | 2,555 |
| Massachusetts | 28 | 134 | 14,680 | 31,325 |
| New Jersey | 8 | 73 | 2,831 | 8,720 |
| New York | 10 | 68 | 1,872 | 5,675 |
| Pennsylvania | 134 | 814 | 15,627 | 33,220 |
| Rhode Island | 2 | 40 | 3,000 | 32,515 |
| Total | 429 | 3,155 | \$288,681 | \$426,805 |

There are also many other States within the humid region wherein irrigation is practiced, and of which no enumeration was made in the twelfth census report. These are Illinois, Michigan, Minnesota,

¹ U. S. Dept. of Agriculture, Office Experiment Stations, Bulletin No. 167, 1906, *Irrigation in the North Atlantic States*.

¹ See Twelfth Census of the United States, 1900, *Agriculture, Part II*, pp. 875-877.

Wisconsin, Ohio, and a number of the other Northern States. And in the South there are the rice-growing States, which were enumerated in the twelfth census of 1900.²

§ 260. **Irrigation in the humid States (continued)**—**Thirteenth census of 1910.**—According to the preliminary census results of the thirteenth census of 1910, there were 2,228 irrigated farms in the States included within what is known as the humid region of the United States, not counting the rice-growing States. In the twelfth census of 1900, 429 were reported.¹ The acreage reported irrigated by the census of 1910 is 28,919 acres, as against 3,155 acres reported in the census of 1900.² This shows a much larger gain proportionately than is shown in any one of the arid States. It also shows that the farmers of the Eastern States, especially those who are cultivating the soil by intensive methods for truck gardening and fruit, are taking advantage of the benefits of irrigation as an adjunct to the natural rainfall. In other words, they are using the water of the natural streams as supplemental to the natural rainfall.³

§ 261. **Irrigation in the rice-growing States—Louisiana.**—The first growers of rice in the United States were the Acadians, French settlers from Nova Scotia, who were driven from their homes at the time that England took over that land from France, in 1755. They were a simple pastoral people, who for nearly one hundred and fifty years following their exile lived in their new southern home, in what is now the State of Louisiana. Their principal source of livelihood was their cattle and agriculture, and rice was a common product of the farm. At that time irrigation was unknown in this section, and the Acadian farmer depended wholly upon the rainfall for the water necessary to flood his rice fields, as well as for his other agricultural crops. Viewed from the stand-

² For Irrigation in the Rice-Growing States, see Secs. 261-264.

See, also, Irrigation in the North Atlantic States, Aug. J. Bowie, Jr., Agent and Expert, 1906, Bulletin No. 167, Office of Experiment Stations, U. S. Dept. of Agriculture; Annual Report Irrigation and Drainage Investi-

gations for 1904, Separate No. 7, U. S. Dept. of Agriculture.

¹ See the Twelfth Census of U. S., Vol. 6, Agriculture, Part II, p. 875.

² See census report, *supra*, pp. 819, 875.

³ For Supplemental Irrigation, see Sec. 29.

point of the value of the returns, early rice-growing in Louisiana offered no attractions for that capital which, in recent years, has developed vast bodies of land not formerly cultivated by the Acadians, and which were believed by them to be entirely worthless except for grazing purposes. There was little improvement in the cultivation of rice so long as the farmer depended upon the rainfall for the floods which moistened his fields. This was also particularly true so long as he confined his labor to the low alluvial lands along the sluggish bayous. His methods of cultivation were too primitive to permit of progress. However, the success of the rice farmers of the South may, in a way, be traced to the experiments of the Acadians, and their success convinced other and more ambitious settlers who went to Louisiana after the Civil War that the business of rice-growing could be made profitable. The necessity of sufficient water at the critical period in the growth of the crop was made plain, and they supplied the deficiency by irrigation. The heavy rains were not allowed to drain off into the bayous, but were dammed back and stored by levees, and the water thus held was saved until it was needed by the growing rice, when the levees were cut and the water allowed to flow over the fields below. But when there was no rain the crop suffered and sometimes failed entirely. This step, although in advance of the earlier method, did not greatly increase the acreage, because of the uncertainty of the water supply. The continued demand for American rice made the crop a profitable one, could one be successfully harvested. And then the farmers went one step farther.

§ 262. **Irrigation in the rice States (continued)**—**States east of the Mississippi River.**—In those States to the east of the Mississippi River rice is successfully being grown by irrigation, although the industry seems to have got its start from an independent source from that in those States to the west of that river. In 1694 a Spanish vessel, being storm-bound, put into the port of Charleston harbor. The captain of the vessel gave to one of the citizens of Charleston, Thomas Smith, a handful of rough rice. Smith took the grain and planted it in his garden. The plants thrived and bore abundantly. Smith gave some of the seed to his neighbors and they also planted it and were successful in raising crops. The

planting continued, and the colonists cultivated the grain with great care, until at length from that single handful of rough rice was developed the famous Carolina rice, now known the world over. At the present time rice is grown in all the Gulf and South Atlantic States, which include the States of Alabama, Georgia, Mississippi, North Carolina, and South Carolina.

Most of the water used in the cultivation of rice in the States east of the Mississippi River is supplied from rivers. Rice here is cultivated less than 15 or more than 30 miles from the sea, following the meanders of rivers. The limits of this 15-mile belt are determined on the sea side by the presence of salt water in the river, and on the inland side by the point at which there is no longer a sufficient tide for irrigating and draining the rice lands. A two-foot tide is taken as a minimum for this drainage and irrigation. On streams near the sea, where the water is too brackish to be used, and on lands above tidewater, the planter must depend upon some other source for his water. To irrigate such lands water is taken from inland lakes and reservoirs; sometimes the water is pumped upon the lands and sometimes the lands are drained by pumps. The methods of irrigation are various, and often crude; in fact, the system of the colonial planter is still in use in many places.

The development of the industry of growing rice in the South Atlantic and Gulf States has been so rapid within the last few years that laws and institutions have not kept pace with the industry, and already serious loss has resulted from the failure of those States to provide for the establishment and protection of titles to the use of water. Although they are old States, irrigation is a new use to which water is put. The western principle of priority has to a large extent been disregarded. Streams have been over-appropriated, and early investors and appropriators, who should have been protected in their use of the water, have been made to suffer by the water being taken by later comers, who should have been prevented from diverting the water until the earlier users were supplied. The laws of these States will be discussed in their proper places.¹

¹ See United States Dept. of Agriculture, Office of Experiment Stations, Bulletin No. 113, 1902, *Irrigation of Rice in the United States*; also, see Annual Report of Irrigation and

Drainage Investigations, 1904, Separate No. 7; also, United States Census, 1900, *Agriculture, Part II*, p. 877.

§ 263. **Irrigation in the rice States (continued)**—The use of pumping plants.—Investigation of the soil of the prairie lands elevated from 10 to 70 feet above the bayous, and experiments in rice-growing thereon, during exceptionally wet seasons, forced the conclusion that these lands were better adapted for rice culture than the lower bottom lands, provided the water could be supplied. There was plenty of fresh water in the bayous near at hand, and the problem was how to get it upon the land. Small steam pumps were first used to raise the water from the coulees, which were dammed and allowed to fill during the winter. Later, after experiments with various styles of pumps, the large centrifugal pump was adopted, which was a pronounced success. Two styles of pumps are now in general use, the centrifugal and rotary pumps, having discharge pipes which range in diameter from 12 to 60 inches, and which elevate from the bayous to the flume above from 20 to 100 or more cubic feet per second.

The effect of the successful irrigation on prairie lands for growing rice in Louisiana has been that these lands that were worth about \$1 per acre and no market even at that price, have risen in value to \$50 or \$60 per acre, and even higher. Another effect has been that the industry has spread to the States of Texas and Arkansas, in which States the raising of rice has become a profitable industry.¹

§ 264. **Irrigation in the rice-growing States (continued)**—Census reports of 1900 and 1910.—The twelfth census report of 1900 was the first that mentioned the irrigation of rice in the Southern

¹ See *Irrigation of Rice in the United States*, by Frank Bond and George H. Keeney, Agents and Experts; *Irrigation Investigations*, 1902, Bulletin No. 113, Office Experiment Stations, U. S. Dept. of Agriculture; *Irrigation in Southern Texas*, Annual Report of Irrigation and Drainage Investigations, 1904, pp. 347-505, Separate No. 6, same as last above; also, Separate No. 5; *Rice Irrigation in Louisiana, Texas, and on the Prairie Land of Arkansas*, Annual Report of Irrigation and Drainage Investigations, 1904, pp. 509-565, Separate No.

7, same as last above; *Cost of Pumping from Wells for the Irrigation of Rice in Louisiana and Arkansas*, by W. B. Gregory, Professor of Experimental Engineering, Tulane University of Louisiana, 1908, Bulletin No. 201, same as last above; *Mechanical Tests of Pumping Plants Used for Irrigation and Drainage in Louisiana*, by W. B. Gregory, Bulletin No. 183, 1907, same as last above; *Rice Irrigation*, Twelfth Census of the U. S., 1900, Agriculture, Part II, pp. 874, 877-879.

States, and in that the details are very meager. The acreage devoted to the culture of rice by this means are not given, and only some of the results in certain States.¹

The preliminary census results of the thirteenth census, however, go into the matter of irrigation in the rice-growing States more in detail and report 4,320 irrigated farms in what is known as the rice belt of the Southern States, with a total irrigated acreage of 694,730. The cost of all plants, which are very largely in the nature of pumping plants, for the utilization of water in the irrigation of rice in this belt, is stated at the sum of \$12,877,352.

§ 265. The water supply—The extension of the irrigated area.—As was said in the first edition of this work,¹ the acreage at that time could be regarded as approaching the maximum possible limit with the then available supply of water and the method of utilizing it. As a general statement it may be said at the present time that throughout the arid region there is scarcely a stream of small size from which water can be conducted upon arable land, that is not utilized to its utmost capacity during the irrigation season. To be sure, in a great many parts irrigation is in the first steps of development, not yet having advanced much beyond the simple and wasteful methods of using the water.²

The simple but very important fact that the area which can be irrigated is dependent upon the amount of water flowing in the streams, is often ignored in the general discussions of irrigation and its possibilities. It is often taken for granted that simply because there are vast areas of fertile land along a river, some of which has been irrigated profitably, larger and larger areas will, with the progress of settlement, be brought under cultivation to an indefinite extent. The assumption can not be correctly made that since a river of a certain locality drains a large area its waters must be proportionately abundant. It is unfortunately the case that many rivers of the arid region occupy a prominent place upon the map, but carry a very small amount of water for at least the cropping period of the year, and then the water is all utilized or needed for the land now wholly or in part under cultivation.

¹ See Twelfth Census Report of the United States, 1900, Part II, Agriculture, pp. 874, 877-879.

¹ See Sec. 28.

² See Wasting Water, Secs. 911-916.

Although in any watershed there is but a definite and usually limited supply of water, as compared with that which might be used, the maximum extent of irrigated lands in the country has been by no means reached.³

There are five methods by which the irrigated area may be largely increased in the country. Some of these methods may not apply to certain particular sections, but usually one or more will apply to all sections of the country. These methods are as follows:

First, the enactment of more stringent laws in many of the States to prevent waste,⁴ coupled with laws regulating the duty of water.⁵ The result of these laws is a greater economy in the use of water and the covering a larger area of land with the same amount.

The second method is the storing of more of the flood or storm waters of the nonirrigating season so that it can be used when needed for irrigation.

Third, more artesian basins are constantly being discovered, and more wells sunk, and thus the irrigated area is also being extended. In the decade of 1889 to 1899, more than three times the number of artesian wells were sunk that existed, all told, prior to that period.⁶ These wells now irrigate certain lands that were either formerly barren, or they help out with the irrigation of lands that were only partially irrigated before. Of course, the sinking of wells should be coupled with stringent laws to prevent the wasting of their waters. Many of the States have such laws.⁷

Fourth, the largest increase in acreage now being brought under cultivation by irrigation is the construction of vast systems to hold back and divert the waters of the larger rivers of the country. These systems are being constructed under the National Irrigation Act by the Government,⁸ and also by private enterprises, usually taking advantage of the Carey Act.⁹ Thousands of acres are now being reclaimed by these works, which, of course, require the expenditure of a vast amount of capital. But even

³ For the estimated future possibilities, see estimate from the Thirteenth Census Report, 1910, Sec. 260.

⁴ See Wasting Water, Secs. 911-916.

⁵ See Duty of Water, Secs. 902-908.

⁶ See Census Report, 1900, Sec. 254.

For Artesian Basins and Wells, see Secs. 1166-1184.

⁷ For the artesian well laws of the respective States, see Part 14.

⁸ See National Irrigation Act, Chap. 65.

⁹ See Carey Act, Chap. 67.

in the face of what has been done by these great works, the large rivers of the country remain comparatively untouched. But the time is fast approaching when their forces will be called upon, even to their utmost capacity, to assist in irrigation as one of the great necessities of the country.

The fifth method might almost be classified with the second, described above; this is the storage of waters, but by means of forestry. This includes the protection of the present forests and reforestation of now denuded tracts of land. The subject of forests, as related to stream flow, has been discussed in a previous chapter of this work.¹⁰ And, as there seen, natural forests form the best reservoirs known to man. They hold back the water in times of flood and permit it to percolate down to the streams in time of drought.

§ 266. **The present condition of the laws of irrigation in the different States.**—It is left to each State to enact its own laws upon the subjects of waters, water rights, or the use of water.¹ And, although the modern irrigation codes enacted in many of the States are a great improvement upon their old laws,² in many of them much remains to be done by way of legislation. The laws concerning water and water rights vary exceedingly. In some of the States the common law rights of a person who owns land adjoining a stream or through which it runs are abolished; in others they are allowed. This of course brings about a conflict between those who claim the water by right of appropriation and the riparian owners, who claim, by virtue of ownership, the right to have the stream flow as it was wont, in its natural channel, undiminished in quantity and undeteriorated in quality. Then, again, in the construction of irrigating ditches, a very small proportion are constructed by outside capital, but are dug by the irrigators themselves, acting individually and taking the water directly from the natural streams, or in co-operation, by several farmers joining their rights and digging a ditch, and then each individual taking from the canal to the extent of his right. Thus the ownership is almost wholly within the hands of the farmers, and the administration of water, if the general lack of system can be

¹⁰ See Chap. 2, Secs. 40-62.

¹ See Sec. 593.

² For the water codes of the respective States, see Part XIV.

called such, is wholly within the control of men who are directly benefited. Owing to the multiplicity of ditches deriving water from the same source or stream, and the many separate interests involved, there constantly arise conflicts between irrigators as to the distribution of water, especially during seasons when the supply is scanty. Disputes of this character are settled sometimes by private arrangement, but more often by recourse to the courts. The expense of lawsuits for the maintenance of water rights is a heavy burden to the farmer, and there is a widespread complaint of the unstability of the value of property. As the land is absolutely worthless in portions of the arid region without water, the commencement of a lawsuit perhaps involving his entire water right causes the value of the land to fluctuate to a greater or less degree, and as the practice of irrigation increases and there is each year a greater demand for water, this is more and more likely to occur. The necessity for better methods of settling disputes and of conferring titles to use of water is beginning to be strongly insisted upon by the farmer, for he now appreciates that the whole value of his land depends upon an absolutely unimpeachable claim to sufficient water to raise his crops. There arises in the minds of all who are cognizant of the facts in the case, a question as to why this condition of insecurity has been allowed to exist, and why the magnificent water resources of many of the rivers of this Western country have been allowed year after year to go to waste. There are also reservoir sites in abundance, plenty of flood waters to fill them, vast tracts of fertile land needing this water. Besides these, there is a legion of irrigators quarreling with each other for the possession of the small amount of water available during the critical season of the year. Why do not these men devote their energies to saving the flood waters, thus improving their own lands and making possible the development of vast additional tracts? The answer to the question is plain. It is all due to the fact that irrigation has grown up without any order or system, each man or group of irrigators taking all the water to be had and caring little for the needs of others.

§ 267. **The divided jurisdiction over lands and waters.**—In the early days, the chief interest of the various States and Territories

of the arid region was in mining and in cattle raising, and very little attention was given by the public at large or by the legislatures or by Congress to the needs and development of agriculture, so that wasteful systems of water distribution have grown up and foisted themselves upon the communities, preventing free action and even obscuring the clear view of greater benefits to be derived by radical improvements. It will now take years to eradicate this evil, owing to the law of vested rights, whereas if the United States Government had taken the matter in hand when the water of streams first began to be used for this purpose, undoubtedly a better and at least a uniform system would have been adopted.

It seems strange in looking back over the history of irrigation that the Congress of the United States should have enacted such uniform and explicit laws in relation to the disposal of public lands, and should have allowed this indispensable incident to those lands to remain wholly unprovided for. If a uniform system had at first been adopted by the Government for the disposal of the waters of the natural streams flowing over the public domain the difficult questions that now arise would have been avoided.¹

The British Provinces have done better in this respect than has our Government, especially those in Canada and in Australia. At an early period in their history of irrigation they enacted laws which absolutely controlled the waters and their use, as well as laws for the acquisition of the title to lands.² At first our Government was undoubtedly the owner of both lands upon the public domain, and also the waters flowing thereover. Now a great portion of the public domain is still owned by the general Government, while the waters flowing within the respective States are either claimed by the States as their property, or are at least controlled by them. And, furthermore, each State does control the waters and their use in its own peculiar manner. No State can require that another State shall adopt certain laws governing waters. Even the Congress of the United States can not demand this nor enact laws for their government. A State may adopt

¹ For the history of the Arid Region Doctrine of appropriation, see Chap. 32, Secs. 595-626.

² For Irrigation in Canada, see Chap. 10, Secs. 177-237.

For Irrigation in Australia, see Chap. 6, Secs. 119-130.

the common law of riparian rights, or it may adopt the Arid Region Doctrine of appropriation. "Congress can not enforce either rule upon a State."³

§ 268. **The necessity for irrigation in this country.**—So far as the practice of irrigation in this country is concerned, no such serious questions as those mentioned in some of the previous chapters of this work have ever entered into the consideration of the subject. All of the present population of this country could exist from the products of the humid regions, and that, too, if the science of irrigation had never been practiced here. The question of warding off, or the protection from actual famine has never yet been considered as a national issue in this country, as has been the case in both Egypt, India, and China.¹ So, in this country, irrigation has never entered into the question of the life and death struggle for existence that it has in the more densely populated countries of the Old World. But as the country becomes more thickly populated, it remains for future generations to see what part irrigation will take in the struggle of humanity.

Thus far in the United States the practice of the science of irrigation has been more from the standpoint of increasing profits and the comforts of life, or from the speculative standpoint, than from a great national necessity. To be sure, it has been practiced to make barren lands bring forth crops; and also to make other lands more productive, but the persons who cultivated these lands might have selected others within the rain belt of the country, and have raised thereon sufficient crops to have made their living. But it is the future generations that are being prepared for. They will eventually receive the greatest benefits. And so, silently, and almost without the knowledge of the people living in the eastern portion of this country, about one-tenth of the population of this country have gone upon that portion of

³ Mr. Justice Brewer, in the case of *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Id.*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552.

For the power of a State to govern

the waters within its boundaries, see Secs. 586-594.

¹ For. Irrigation in Egypt, see Secs. 65-68, 88-102; in India, Secs. 70, 103-118; in China, Secs. 69, 168-170.

the United States lying outside of what is known as the rain belt, west of the 100th meridian, into what is known as the great arid region, and have been laying the broad foundations upon which posterity and the future generations of this country will have to depend upon largely for their living. In that portion of the country the artificial application of water to the soil is in a greater or lesser degree necessary for the production of crops; but, when so applied, the crop results are such as are almost unheard of in the eastern portion of the country. Thus the "Irrigation Empire" has grown up in this country without its magnitude and vast possibilities being known until within the last few years. To date, the great majority of the irrigation projects have been constructed by private enterprise. And it was not until the last decade that the National Government made any effort to assist in the construction of these works, when it passed the National Reclamation Act in 1902.² And, even now, although there are many large rivers either within the arid region, or large rivers in such proximity that their waters may be brought within the arid region, and there are yet millions of acres of uncultivated arable land upon which these waters can be utilized, no great general scheme, such as was projected many years ago in India and is now being projected in Egypt by the English Government, has ever been undertaken by our Government. This is simply from the fact that this country has not needed it in the struggle for existence. In those countries they were needed from the very necessities of their conditions. What may not our Government also do, when bare necessity urges it to further action?

§ 269. **The future of irrigation in the United States—A National question.**—The day is certainly fast approaching when the public will understand that irrigation is not only the concern of the arid region, but of the whole United States—that it is not only necessary in order to render a part of the country habitable, but is indispensable as a means of supporting the rapidly increasing population of the arid region itself, as well as aiding in sustaining the population of the East. Instead of a narrow sectional question, irrigation is becoming more and more each year a broad national problem.

² For the National Reclamation Act, see Chap. 65.

There are vast tracts of arable land in the West still unsupplied with water, and it is a question of making use of the available water supply in order to bring these lands into cultivation that is of the most vital importance at the present time. As we stated in the first edition of this work would be the case, the general Government has been compelled to take steps for the construction of storage reservoirs and for great works necessary for the utilization of the waters of the great rivers of the country.¹ This the Government is accomplishing under the authority of the National Reclamation Act.² These works, as a general thing, are larger in design than private capital is willing to undertake. Also, by means of the Carey Act,³ private capital is given the opportunity, under the supervision of the States, to construct these works; and, under the scheme, the settler acquires title to both the land and the water right. In nearly all of the States of the West, projects under the Carey Act have been and now are being constructed, and, to date, the State of Idaho is leading in these projects.⁴ Many projects financed entirely by private capital, and which come under neither of the above-named Acts, have been and are now being constructed in every State of the West. All this tends toward the settlement and development of the "arid West."

The troublesome questions concerning water rights have, during the past fifteen years, become more settled and uniform. The law governing the title to real property has been practically settled for hundreds of years. The law governing the title to water for irrigation has been in existence but fifty years, and although it is by no means settled, it is becoming more so each year. The modern tendency is toward the end that every acre of irrigated land must have a title to the water that irrigates it. Every stream which is diverted and utilized for irrigation must be divided among a multitude of users. The waters of every stream that runs through two or more States must in time be apportioned between those States. The rivers or other bodies that separate or run through the lands of this country and adjoining nations must be apportioned between the two countries. All of these

¹ Kinney on Irrigation, 1st Ed.,
Sec. 36.

² See Chap. 65.

³ See Chap. 67.

⁴ For Irrigation in Idaho, see Part
XIV.

matters are bound to be settled in time. The condition and activity in irrigation matters place a peculiar emphasis on the need of the settlement of the laws and policies which are for all future time to control the use of the waters of our Western streams, and to determine who are to have the right to their use.

During the last decade many of the States enacted drastic laws upon the subject of waters and water rights, but there is still very little uniformity between the laws of the different States.⁵ The laws of the States of California and of Wyoming and Utah are entirely different. In some respects they should be different, as the physical conditions of the respective States differ. There is, however, a commendable tendency upon the part of the respective legislatures to abrogate, as far as vested rights will permit, the common law of riparian rights, or to limit and define those rights, and in all cases to make the right to the use of a certain amount of water depend upon its actual application to some beneficial use or purpose. The new water and irrigation codes of the respective States met the ideas of their respective legislatures, and while, in a number of cases, they are not the best laws which should have been enacted, they are the best laws that could have been enacted at that time; and time and experience will bring about the enactment of amendatory laws, which will more nearly meet the requirements of all parties interested.

The future outlook for the development of this Western country is bright, indeed. And, as further development and settlement can only come by bringing into cultivation by the means of irrigation the millions of acres still uncultivated, the future of irrigation and irrigation projects is also bright.

§ 270. Future of irrigation—Secretary Hitchcock's report.—In concluding this chapter, I will add that it has been sufficiently demonstrated that irrigation is an absolute necessity to a great portion of the arid region. In the course of a few years it will be recognized as a great National necessity. The demands for the products of this country are year by year becoming greater and greater, both from within and without. This country will be compelled to meet those demands.

⁵ For the water and irrigation laws of the respective States, see Part XIV.

In summing up the whole subject of irrigation, its present condition and future needs, nothing more concise and direct has been written upon the subject than the report of the Secretary of the Interior, Honorable Ethan Allen Hitchcock, to the President, dated November 21, 1901. This report was made before the National Irrigation Act was passed, and sums up the situation as it then existed, and what would be necessary in the future if any great amount of the arid public lands were to be reclaimed. He said, in part:

"Briefly stated, the results of the examination of the extent to which arid lands can be reclaimed by irrigation show that, while one-third of the United States is still vacant, there are relatively few localities where homes can now be made. This is not because the soil is barren or infertile, but on account of the difficulty of securing an adequate water supply. There is water to be had, but this water is mainly in large rivers, from which it can be taken only by great structures, or the supply comes in sudden floods and can not be utilized until great reservoirs have been built. It is impossible for a laboring man or an association of settlers to build these great works.

"The pioneer coming to the arid region found many small streams from which water could be taken out upon agricultural land. He was able, through his own efforts, to irrigate a small farm and to make a home. These easily available waters have been taken, and a man can no longer secure a foothold, although there still remain 600,000,000 acres of vacant land. It is possible by water storage and by building diversion works from great rivers to bring water to points where such men can utilize it and can enjoy opportunities similar to those had by the earlier settlers. Unless this is done much of the country must remain barren, and thousands of men and women eager to become independent citizens must remain as wanderers or tenants of others.¹ . . .

"Enough work has been done by private capital to demonstrate the fact that water conservation and the diversion of large rivers is practicable, but, like many other works of great public importance, it can not be made a source of profit. . . .

¹ Upon this subject, also see First Edition of Kinney on Irrigation, 1893, Secs. 29-36.

“The argument has been presented that if the Government will not make it possible to bring water to these lands they should be turned over to the States; but the majority of the citizens who have studied the subject are opposed to such action, on the ground that the vacant public lands are the heritage of the people of the United States, and should be held for the creation of homes, and not made a subject of speculation, as has almost invariably been the case with lands donated to the States. The whole trend of enlightened public sentiment is in favor of an expansion of industries and commerce internally through wise action by the National Government rather than attempting to get rid of the duties and opportunities of ownership by giving away this valuable property.

“Two distinct conditions are to be clearly distinguished in the problem of water conservation for the development of the West. On the one hand, there are localities where the agricultural land along the rivers has been brought under irrigation, and there is a demand for water to an extent far exceeding the supply, and where all of the flood water, though stored, would not suffice to satisfy the demands of the lands now partially tilled. The other contrasting condition is where there still remain vast bodies of public land for which water can be provided by means of reservoirs or by diversion from large rivers whose flow can not be used. Here the construction of works of reclamation in no way affects lands now in private ownership. Between these two extremes are all varieties of intermediate conditions, but these may be arbitrarily classed with one or the other.

“In the first case reservoirs, if constructed, must be treated in the same way in which other public works having to do with rivers and harbors are managed. The water conserved should be used to increase the flow of the streams during the season of drought, regulating the volume so that it can be utilized to the best advantage, according to the laws and customs prevailing in the locality. This is comparable to the conditions where the outlet of a harbor has been improved without reference to the benefits to the owners of the docks around the shores.

“Under the other condition, where there are unappropriated waters flowing to waste which can be brought within reach of public land, it is possible to make provisions such that the Government can be reimbursed for its expenditure. The lands to be benefited

by such works should be reserved for homestead entry only in small tracts, each being subject to the payment, before title is finally passed, of a sum equivalent to the cost of storing or conserving the water, such payment to be made, if desired, in installments extending over a number of years. Water should be brought to the point where the settlers can, with their own labor or by co-operation, construct ditches and laterals to reclaim the desert land. . . . In this manner thousands of the best class of citizens in the country would be permanently located in prosperous homes upon what is now a desert waste.

"It has been estimated that the western half of the United States would sustain a population as great as that of the whole country at present, if the waters now unutilized were saved and employed in irrigating the ground. . . .

"The water for irrigation should be distributed in conformity with the laws of the State and without interference with any vested rights which have already accrued. . . .

"The investigations which have been carried on demonstrate that, looking at the matter from all sides, there is no question now before the people of the United States of greater importance than the conservation of the water supply and the reclamation of the arid lands of the West, and their settlement by men who will actually build homes and create communities."

CHAPTER 12.

IRRIGATION ON INDIAN RESERVATIONS.

- § 271. Scope of chapter.
- § 272. The condition of Indian lands—The present policy of the Government.
- § 273. The principal factors in the civilization of the Indian.
- § 274. Irrigation by different tribes in Arizona.
- § 275. Irrigation by different tribes in California.
- § 276. Irrigation by different tribes in Colorado.
- § 277. Irrigation by different tribes in Idaho.
- § 278. Irrigation by different tribes in Montana.
- § 279. Irrigation by different tribes in Nevada.
- § 280. Irrigation by different tribes in New Mexico.
- § 281. Irrigation by different tribes in Oregon.
- § 282. Irrigation by different tribes in Utah.
- § 283. Irrigation by different tribes in Washington.
- § 284. Irrigation by different tribes in Wyoming.
- § 285. The effect of irrigation upon the Indian.

§ 271. **Scope of chapter.**—A description of modern irrigation in the United States would not be complete without mentioning the progress of the American Indian in this respect.¹ This chapter will be devoted to that subject, and to the progress and education of the Indians by this means.

§ 272. **The condition of Indian lands—The present policy of the Government.**—Except in the cases of a few tribes that have tilled the soil since the first arrival of the white man, the progress of the Indian in all forms of agriculture has largely taken place within the last thirty years, and this through the instrumentality of the Government; and, even among the agricultural tribes, governmental supervision has greatly improved their economic condition. In undertaking to educate the Indian and make him a self-supporting citizen, the Government has met with many obstacles. One of the principal drawbacks to self-support through agricultural operations is the poor and unfavorably located land of many of the reservations. In many instances the Indians were driven

¹ For Modern Irrigation in the United States, see Chap. 11, Secs. 238-270.

back from the better lands by the cupidity of the white man in selecting and settling upon them. In other cases the Indians themselves were to blame in selecting land which they thought no white man would desire, no thought then being given to the advantages and natural resources for agriculture, the only thought being to secure good hunting grounds. However, through the appropriations of Congress, much of the land on the reservations has been improved, and many of the arid tracts have been reclaimed for cultivation by the construction of irrigation systems.

Although the natural tendency of the Indian is to lead a nomadic life, those who know him best unite in recognizing his capacity for work and education. He has strength and endurance, and, once convinced that his efforts in tilling the soil will repay him, he is usually willing to work. Notwithstanding the numerous difficulties there has been a steady progress toward civilization in the past two decades on most of the reservations. A number of the tribes are now peaceable, self-supporting agriculturists, wearing the clothes of the white man, and able to speak, read, and write the English language. It has been ascertained that the Indian who works is on the high road to civilization, and it has been the policy of the Government during the last few years to divide their lands in severalty and compel him, as far as possible, to work for his own living and that of those dependent upon him.

If the present policy of the Government is continued for a few years longer, under wise management and with the same results that it has attained in the past, it will be but a few years longer until the paternal restraints of the Government will be entirely removed and the Indian will take his place among the citizens of this Republic. In fact, this is already the condition in many sections of the country, and each year the "blanket Indians" are becoming scarcer.

The following is found in the report of the Commissioner of Indian Affairs to the Secretary of the Interior for the fiscal year ending June 30, 1911:¹

"For successful cultivation of the lands on which most of the Indians live, in the West and Southwest, irrigation is a prerequisite. In the year 1910 I reported that over \$5,000,000 had already been spent to bring a little more than 300,000 acres of Indian lands

¹ See above report, pp. 16 and 17.

under ditch. For the year 1911 Congress appropriated slightly in excess of \$1,300,000, all but \$259,000 of which was made reimbursable to the Treasury when the irrigated lands are in successful cultivation and the Indians have become self-supporting. In keeping with our determination to give the Indians every opportunity to become industrious, at least \$145,000 of the year's expenditures by this office was paid to Indians for labor. Furthermore, the Reclamation Service, on the four projects it is constructing for the Indian Service, paid out \$169,000 for Indian labor. . . . In addition to the irrigation works which the office directly conducts, the Reclamation Service, under a co-operative agreement, has in charge four extensive and important projects for Indians. . . . Reports from superintendents in all parts of the field show a general alertness concerning the Indians' water rights. Proper steps are being taken to establish permanently rights which might be called into question. For example, statements have been prepared regarding water claims for all pueblos in New Mexico and filed with the territorial engineer. It is worth noticing that the Pueblo Indians under the Albuquerque School utilize water for 8,000 acres and have 95 miles of ditches, which they have built themselves. In our efforts to vest adequate water rights in the Indians the State authorities frequently co-operate, as in Wyoming at the Wind River Reservation, where the State has extended the time for final proof to 1915 and 1916 because of the large amount of ditch construction necessary in the project, and at Uintah, Utah, where the legislature provided for an extension of time to 1919."

§ 273. The principal factors in the civilization of the Indian.—The two principal factors in the advancement of the Indian are the Indian Agent and the Government schools. The position of the Indian Agent is one of great responsibility and opportunity, and, if the confidence of the Indian be once gained, his influence over them is great. Hence it has been the care of the last few administrations in Indian affairs to see that the agents selected for the various reservations should be men of good character and executive ability and who know the Indian and his needs, rather than to appoint men for some political reasons. Experience has taught this Government that, in Indian affairs at least, there is no place for the man who is a professional politician only.

The Government schools give the Indian youth an elementary education, teach them the dignity and value of labor, the necessity for exertion for their livelihood, and especially the advantages of taking up individual allotments of land and becoming independent as individuals, rather than a strict adherence to the tribal relations. The school farms upon which the boys are required to work a portion of the time, furnish an opportunity for them to become familiar with the different varieties of farm labor. They are also taught how to construct irrigation ditches and to divert the water from the streams, and how to irrigate the various crops. In the higher schools they are taught engineering and how to construct irrigation works. All this has resulted in the utmost good to the Indian, and many tribes have become first-class, independent citizens; also many individuals have acquired renown as scholars, and even more have acquired wealth. When they have acquired this stage, it is the policy of the Government to release its form of paternal supervision. But until the Indians can attain to an independent station in life they must remain the wards of the Government.¹ And, surprising as it may seem, the best results along these lines have been attained in those portions of the country which are strictly within the arid region, and among tribes that were less susceptible to education and civilization. In the semi-arid region, the whites have been very slow in taking advantage of the benefits to be derived from irrigation;² the Indians upon reservations in that region have been much slower, and irrigation is not practiced to any great extent by them.

The projects, which have been and are now being constructed under the provisions of the National Reclamation Act,³ are aiding the Indians in many localities. They are oftentimes employed as laborers, and are considered among the best workmen by the officers in charge. They are given individual allotments of land, and water is furnished from these projects with which to irrigate them. In fact, in many instances, the Indians are taught the science of irrigation by special agents employed by the Government

¹ See United States Census, 1900, Part II, Agriculture on Indian Reservations, pp. 717-740; Appropriation by Indians, Sec. 680.

² For Irrigation in the Semi-arid Region, see Secs. 239, 240, 252-256.

³ See Chap. 65.

for that purpose. In the following sections of this chapter we will give in detail some of the results upon the subject of the civilization of the Indian by means of irrigated agriculture.⁴

§ 274. *Irrigation by different tribes in Arizona.*—Passing by all reference to the Indians who are located in the eastern or humid portions of the United States and confining our inquiry to the reservations in the arid part of the country, we will endeavor to describe some of the things that the various tribes of Indians have accomplished in the way of irrigated agriculture, and, incidentally, the reciprocal results upon the Indians themselves. All of the States in the arid region have Indian reservations, and our discussion therefore will be by States.¹

The Indians of Arizona were among the earliest agriculturists on American soil.² The Spaniards, who explored this region about the middle of the sixteenth century, found them planting, sowing, and irrigating the fertile soil in their primitive manner. With the exception of the Apaches, the Indians of this State are all either agricultural or pastoral people. Practically none of the land on their reservations can be cultivated without irrigation, but by this method hundreds of acres of desert land have been converted into fruitful fields of grain and other crops. The greatest need of the Arizona Indians is the systematic and scientific development of the water supplies the reservations afford, although during the last few years there has been great improvement in this respect. As it is, the Indians of the State, with the exception of the Apaches, are practically self-supporting. In 1899, of the total number of farms in Arizona 30.4 per cent were owned or operated by Indians, but the total acreage of these farms constituted only 2.3 per cent of the total area of the farm land in the State.

The Colorado River Reservation is one of the best situated in the State, as far as land and water are concerned. It is the home of 558 Mohaves (of Yuman stock) and is situated in the extreme western portion of Arizona, contains an area of 376 square miles, and extends for sixty miles along the Colorado River. The resources of this reserve are very great, and it is estimated that

⁴ See Secs. 274-285.

² See Secs. 79-84.

¹ See Secs. 275-284.

nearly the entire valley can be irrigated, and thus support more than one-half of all the Arizona Indians. Part of this reservation extends across the Colorado River into California. The Government supplies 40 per cent of the support of these Indians. Steps are being taken to bring more land under cultivation and thus render them more self-supporting. Part of this tribe live in California, near Needles, and will be mentioned later.³

The Gila and Salt River Reservations, located in the south central part of Arizona, contain a total area of 631 square miles and are the home of the Pima Maricopa tribes, which are now practically inseparable, and in 1900 had a total population of 4,619. These Indians have been agricultural people from time immemorial. They are peaceable and industrious; they understand the cultivation of their crops by irrigation, and are practically independent. Owing to the construction of the Florence dam, those living near the Gila River were short of water for several years prior to 1900, but, owing to more recent arrangements, they are now better supplied. They raise all kinds of farm products common to that section of the country. The Florence dam was constructed to divert the water above their reservation and run it upon lands of the white settlers, and is another illustration of how the Indians have been robbed.

The Hopi Reservation is situated in the northeastern part of Arizona, adjoining the Navajo Reservation on the south and west, and contains an area of 3,863 square miles. These Indians are of Shoshonean stock, and since the white man has known them have been an agricultural and pastoral tribe, quiet and inoffensive. They live in compact villages and cultivate their lands on the outside, entirely by means of irrigation. In 1900 the total population was 3,807. They are very provident and entirely self-supporting. They raise the ordinary crops and also fruit. The majority of their farms are small, ranging in size from three to thirty acres. Their water supply is very limited and they still irrigate in the primitive Indian fashion.

The Navajo Reservation is situated in the northeastern part of Arizona and extends into Utah and New Mexico. It contains an area of 12,029 square miles. The greater part of the land is valueless, and that portion which can be utilized is best adapted for

* See Sec. 275.

grazing sheep and goats. Small patches of land are irrigated along the mountain streams. They are a pastoral people, and in 1890 had a population of 8,897. The Government supplies 10 per cent of their subsistence. The irrigation works are small, but since 1900 they have been assisted in this respect by the Government; however, they still lack an adequate system.

The Papago Indians are situated on two reservations, *the Papago or San Xavier*, and the *Gila Bend Reservations*. The former is situated in the extreme southern part of Arizona and has an area of 108 square miles. The latter is situated in the southwestern part of the State and contains an area of 35 square miles. The population in 1900 was 1,205, and they are practically self-supporting. They are industrious and economical, spending the money received from their produce on improving their land and water systems, improved machinery, and building homes. Much of the land under cultivation has been allotted and consists of small individual holdings. Their water supply is insufficient to irrigate all of their lands; however, they are adopting better methods of conservation of the supply and the irrigated land is being gradually extended.

The Fort Apache and San Carlos Reservations, the home of the Apache Indians, lie in the southeastern part of Arizona. Previous to 1897 they were united and known as the White Mountain Reservation. Fort Apache is the more northerly of the two reserves and contains an area of 2,628 square miles. The population on this reservation in 1900 was 1,876, the settlements being along the streams which water the narrow valleys. Much of their land is well adapted to grazing, and with proper irrigation facilities could be cultivated. The Apaches are naturally wild, nomadic, and warlike, having taken to peaceful pursuits only within recent years; but they now manifest a spirit of energy, characteristic of the tribe, in their efforts to earn a livelihood, and for the time that they have been at it have done remarkably well. The crudeness of their irrigation facilities constitutes a great drawback to their self-support, and at present the Government furnishes 20 per cent of their subsistence. But it will not be many years before they will be entirely self-supporting.

The San Carlos Reservation, upon which part of the Apaches live, has an area of 2,866 square miles; the land is arid and all

requires irrigation to produce crops. They have a population, including several hundred Mohaves, aggregating 3,065. During the last few years these Indians have also made great progress toward self-support, but the Government still furnishes 33 per cent of their subsistence.

The Walapi Reservation is located in the northwestern part of Arizona and has an area of 1,142 square miles. They had a population in 1900 of 620. Owing to the scarcity of water the land is practically worthless for either agriculture or stock raising, about 100 acres in all being cultivated. In order to gain a livelihood they find employment among the whites, and the Government supplies 25 per cent of their subsistence.

The Supai, or Havasupai Reservation is situated in the Grand Canyon Forest Reserve in the northerly part of Arizona, and contains 60 square miles. There is a population of 250 on this reservation, all of whom are self-supporting. They have plenty of water for irrigation and good soil, and every inducement to be an agricultural people.

§ 275. **Irrigation by different tribes in California.**—None of the California Indians knew anything of the irrigation of crops until the advent of the Spaniard, and, with the exception of the Mission Indians, they received their first instructions in this line when taken in charge by the United States Government. At the present time these Indians are located on twenty-six reservations. They have advanced rapidly in the ways of civilization and are nearly all self-supporting, rations being issued by the Government only to a few, who are old and infirm. They are in advance of the Indians of the plains in intelligence and civilization.

The Hupa Valley Reservation is located in the northwestern part of California and comprises an area of 155 square miles, and has a population of 1,112. The land of the reservation is principally timber land, the total agricultural area being about 1,000 acres of level valley land, black and rich, and very productive. The individual holdings are about thirty acres to the family. There are two tribes—the Hupa and Lower Klamath Indians. Practically every able-bodied man is engaged in farming and stock raising. As a tribe they are industrious and self-supporting. Many have received patents to their lands, and not only are they making a

living, but are also gaining considerable wealth. General farming is practiced and many have orchards of fruit-bearing trees of different varieties.

The Mission Indians will be described together. They are located on small reservations scattered over various parts of the State, but mostly in the southern portion. Their name was derived from their connection with the Spanish missions established in the latter part of the eighteenth century. Among them are found the representatives of a number of various tribes. Under the Spaniards they were taught to till the soil by means of irrigation and to support themselves by farming. The total population of the Mission Indians in 1890 was 2,856. Upon some of the reservations the rainfall is sufficient to produce crops without irrigation, while others would be practically worthless without it. *Morongo Reservation*, the largest and best of all, is provided with cement ditches constructed by the Government, while on other reservations where irrigation is carried on, the water is conducted in ditches of native construction. Upon all of these reservations the Indians have patterned after the methods of the whites and raise general crops, and many have orchards.

The Round Valley Reservation has an area of 59 square miles and is situated in the northwestern part of California. The valley land and the foothills constitute an excellent field for agricultural operations. On this reservation are located the remnants of nine tribes, with a total population in 1900 of 599. These Indians may well be classed as civilized, nearly all being engaged in farming and stock raising. All the land suitable for agriculture has been allotted, giving an acreage of about forty acres to the family. The soil is very rich and produces abundantly, and but very little of the land is irrigated.

The Tule River Reservation is located in the south central part of the State. It has 76 square miles of land and has a population of 143. These Indians are self-supporting and receive no aid from the Government. They raise good crops and irrigation is practiced to a considerable extent. Many good orchards are to be found and the tribe is quite prosperous.

The Yuma Reservation has an area of something over 71 square miles of land and is situated in the southeastern part of California, with a population in 1900 of 817. These Indians are the most primi-

tive of the Californian tribes in manners and customs. Without irrigation the land of their reservation is worthless for agricultural purposes. The Colorado River, receding after its annual overflow, leaves a section of very fertile bottom land, which the Indians plant in their very primitive manner by digging holes in the ground about ten inches in depth and three feet apart and putting in the seed. In this manner they plant a strip of from 50 to 100 acres, but give the crops no attention from the time they are planted until harvested; consequently only a small portion ever matures. They are being taught to better utilize the water from the river, which, if properly distributed, would insure fairly good crops.

§ 276. **Irrigation by different tribes in Colorado.**—The Colorado Indians have been slow to adopt agriculture as a means of a livelihood, for the reason that they are by nature averse to manual labor. Their reservations are few and comparatively insignificant, with the exception of the Southern Ute Reservation.

The Southern Ute Reservation is located in the extreme southwestern part of Colorado, has 870 square miles of land, and is occupied by several different branches of the Ute tribe. These bands are commonly known as the Southern Utes, and until recent years were considered as "blanket Indians," as they lived almost entirely upon the support furnished by the Government and by hunting and fishing. The indifference which they have always manifested toward education has been a great drawback to their advancement. However, some of these bands have become interested in agriculture, and during more recent years have made remarkable advancement along that line. No part of the reservation can be cultivated without irrigation, but where water can be had the soil is well adapted to agriculture. *The Moache and Capote* bands reside upon the eastern portion of the reservation, which is well supplied with irrigation facilities. These two bands are the most industrious and, of course, have made the greatest progress toward civilization. They have accepted the land in allotments and are making good progress in bringing it under cultivation. There are now in operation four large canals, aggregating more than thirty miles in length, together with many smaller ditches. The work is gradually being extended and new

land is constantly being reclaimed for cultivation. When the irrigation systems of these Indians are fully developed they will undoubtedly become self-supporting. At present the Government furnishes 25 per cent of their subsistence. They raise the crops usual to the farmers of that section of the country and get good prices for everything that they raise.

The Wiminuche Utes constitute more than one-half of the tribe located on the reservation and occupy its western half. They have no water supply and consequently little opportunity to improve the land. When the allotments were made by the Government these Indians refused them and elected to hold the western lands in common. Their condition is becoming more deplorable each year, and until their part of the reservation is furnished with an irrigation system the Wiminuche Utes will remain entirely dependent upon Government rations for their support.

§ 277. **Irrigation by different tribes in Idaho.**—Like most tribes of the Northwest, the Indians of Idaho had no knowledge of agriculture previous to the coming of the white man. All of these Indians now, however, are located on land capable of cultivation and are receiving instruction in agriculture by means of irrigation from the Government. The most of these Indians having relinquished a portion of their lands to the Government, they are now able, from the proceeds, to buy all necessary implements and equipment.

The Coeur d'Alene Reservation is located in the northwest part of Idaho and has 404,480 acres, and in 1900 had a population of 752. The tract is well watered, with rich soil, and constitutes a fine body of agricultural land, requiring very little irrigation to produce abundantly. Material progress has been made from year to year in the improvement of their farms, many of which compare favorably with the farms of neighboring white men.

Fort Hall Reservation is in the southeastern part of Idaho and has 1,331 square miles, occupied by the Bannock and Shoshoni Indians, with a population in 1900 of 1,387. The Indians ceded a portion of these lands to the Government and accepted allotments for themselves. The ceded portion has been opened up for settlement. The Government has constructed an irrigation system for the Indians which is being operated with great success.¹ Nearly

¹ Fourth Annual Report of the Reclamation Service, 1904-1905, p. 163.

all of these lands require irrigation to produce crops. These Indians, especially the Bannocks, have been rather backward in adopting the ways of the white man. However, the interest manifested in farming has been increasing in the last few years, and, with the assistance given by the Government in constructing the irrigation system, will soon become entirely self-supporting; however, in 1900 the Government was furnishing 30 per cent of their subsistence.

The Lemhi Reservation has 100 square miles in the eastern part of the State, occupied by several tribes, with a total population in 1900 of 486. There are about 5,000 acres suitable for agriculture, provided irrigation be practiced. These Indians are honest, peaceable, and kindly disposed, but far from civilized, as they cling to their native customs. The Government employs farmers to instruct them, and great improvement has been made during the last few years. The acreage cultivated by the individual Indians ranges from five to sixty acres. With the aid of stock raising, to which the country is adapted, they will in time become self-supporting. In the meantime the system of irrigation on the reservation, with the aid of the Government, is gradually being extended.

The Nez Perce Reservation now exists only in name. The original area comprised 746,651 acres, situated in the northwestern part of Idaho. In 1895, 542,000 acres were ceded to the Government and most of the remainder allotted to the Indians. The allotted land is well adapted to both agriculture and to pasturage, yielding abundantly without much irrigation. In the allotment each individual Indian received 80 acres of agricultural land or, in some instances, 160 acres of grazing land. As a tribe they are earnest, energetic, and progressive people, and are gradually dropping tribal customs for those of civilization. They are entirely self-supporting. From the rentals of their lands they receive more than \$20,000 a year, and 68 per cent of their subsistence is furnished by cash annuity. The majority of them cultivate from 10 to 30 acres each, and a few as high as 100 to 300 acres.

§ 278. **Irrigation by different tribes in Montana.**—Montana, once a famous hunting-ground and battle-field, is now the quiet home of many Indian tribes, all of which are adopting the customs and occupations of the white man. However, at the present

time more than half of the subsistence of the Montana Indians is furnished by the Government; but, owing to their progress, this will be reduced in the near future.

The Blackfeet Reservation is located in the northwestern part of Montana and has an area of 2,750 square miles, and in 1900 had a population of 2,256. Stock raising has been their principal occupation. The eastern part of the reservation and the country immediately east of it is adapted to irrigation. However, up to date, irrigation on this reservation has been neither systematic nor scientific. Here and there the Indians, with the assistance of an engineer to run the lines, have done considerable ditch work. Many of the ditches are out of repair, and others entirely worthless. The necessity of irrigation grows more apparent each year. The Government has taken the matter in hand and established school farms, and the Indians have rapidly adapted themselves to the new methods. Under the National Reclamation Act the Government is constructing the Milk River project, which will bring under irrigation a large area included in the reservation. This will be of great assistance to these Indians, as they are industrious and disposed to advance. At the present time the Government furnishes 50 per cent of their subsistence.

The Crow Reservation, situated in the southern part of Montana, formerly comprised an area of 5,475 square miles, and in 1900 had a population of 2,660. This region is exceedingly arid and requires irrigation for successful farming. The valleys of the Big Horn and Little Horn contain extensive areas of rich agricultural land and an abundant supply of water, which can be easily conveyed to the land. As a tribe the Crows are peaceable and intelligent. Agriculture is their principal pursuit, and in it they are making great progress; but great credit is also due them for labor on the Government irrigation works. All earth work of the system, with the exception of rock cutting, has been performed by them. The Government furnishes 25 per cent of their subsistence and annuity payments of 25 per cent more. The most important step toward the civilization of the Crow Indians is the Crow Reservation project, being constructed under the National Reclamation Act, which when completed will provide every family with sufficient agricultural land for its self-support. This system ranks among the finest in the United States in point of construction and

area covered by ditch, the work being of the most permanent character. The policy of the Government in employing Indian labor has been of the greatest benefit to the Indians, as, besides providing employment, it has taught them habits of industry, and has also given them a knowledge of irrigation which they could have acquired in no other way. Being required to earn their money, they have come to know its value. Government farmers have charge of farm schools and the greatest interest is taken in them, and they are fast becoming a civilized people and will soon be entirely self-supporting. Under an Act of Congress approved April 27, 1904, the Crow Indians ceded to the United States a strip of land including the northern part of their reservation, embracing about 1,100,000 acres. The Indians on the ceded strip are to have a reasonable time within which to elect whether to remain there by taking allotments or to remove to the diminished reservation. After the completion of the allotments to the Indians the residue of the ceded land is to be subject to withdrawal and disposal under the Reclamation Act, in so far as irrigation projects are found therein. Already the Government has taken up several projects under the Reclamation Act to reclaim lands that lie both in the ceded and unceded portions of the Crow Reservation. These are the Crow Reservation project, the Fort Custer subproject, the Huntley project, the Waco-Sanders subproject, and the Big Horn subproject.¹ It has been found from experience that by allotting the land to individual Indians, greater interest is taken and better results obtained than by the tribal or communal system. The communal system takes away all sense of personal responsibility and individual interest, which are essential elements of success, with these Indians, as well as all others.

The Flathead Reservation has an area of 2,240 square miles in the western part of Montana, occupied by five tribes having a total population in 1900 of 2,142. Progress in civilization differs widely here; a large number are educated and self-supporting and have comfortable and modern homes, while others are backward and densely ignorant, and very poor. There is no regular system of irrigation on the reservation, and much of the land under cultivation lies along the creek bottoms, requiring little or no irriga-

¹ See Fourth Annual Report of the Reclamation Service, 1904-1905, pp. 209, 225-228.

tion to grow successful crops, or is located where small individual ditches have been made and upon which water can be turned with but little labor. None of the higher land can be cultivated successfully without irrigation. There is plenty of water for the reservation if properly utilized, and steps are being taken to establish a better irrigation system. Approximately 500,000 acres of land are cultivable. At present the Government furnishes a considerable percentage of their sustenance.

Fort Belknap Reservation is in the northern part of Montana and has an area of 840 square miles, occupied by two tribes—the Grosventre and Assiniboin—with a total population in 1900 of 1,312. These Indians are making good advancement toward civilization by abandoning their nomadic habits for quiet and peaceful pursuits. Tribal life has been largely broken up and nearly every head of a family has his own home and farm. However, the Government rations constitute 65 per cent of their support. They have a large amount of good land and plenty of water for the same, but little attempt has been made at irrigation, and the results have been unsatisfactory. Attempts are now being made to improve their situation.

The Fort Peck Reservation has an area of 2,775 square miles in the northeastern part of the State, the Missouri River forming its western boundary. There are six distinct bands, all of the Siouxan stock, the total number in 1900 being 1,946. Agriculture is very uncertain without irrigation, and it is very difficult to get the water out upon the land. The number of acres devoted to farming by the individuals is very small, ranging from one to five acres. There is no system of irrigation on the reservation, and the efforts in this direction have been very slight.

The Northern Cheyenne Reservation has an area of 765 square miles in the southeastern part of Montana, and in 1900 had a population of 1,554. The larger number are poor and improvident and cling to their old customs. Approximately 20,000 acres on their reservation could be cultivated with sufficient irrigation, but the water supply is very limited. They are indifferent to agriculture and the Government practically furnishes their entire support.

§ 279. Irrigation by different tribes in Nevada.—None of the Indians of Nevada tilled the soil to any great extent before the

coming of the white man. The tribes inhabiting this State are all small, and, as a general thing, very poor. A number of them are entirely dependent upon the Government for their subsistence. There has been considerable improvement, however, during the last few years in their manner of living, and especially along agricultural lines.

The Duck Valley Reservation has an area of 488 square miles in the extreme northern part of Nevada, and in 1900 had a population numbering 439 of the Paiute Indians. There are 40,000 acres of arable land that can be cultivated profitably for hay and forage, but, on account of the altitude being 6,000 feet, the seasons are short, and general agriculture is attended with but partial success. The water supply for irrigation is also very unreliable, being mountain streams. Sometimes they are very high, and at other times very low, and during the long, dry summers there is very little water, if any. The Government furnishes 30 per cent of their support. This will be gradually lessened, as the Indians are good workers, and if given a fair opportunity will be self-supporting in a few years.

The Pyramid Lake Reservation is in the western part of Nevada, and has an area of 503 miles, the larger part being taken up by Pyramid Lake. It is also inhabited by the Paiutes, and in 1900 had a population of 705. There are less than 20,000 acres available for agriculture. They are contented and industrious Indians, taking kindly to farming and stock raising, and are practically self-supporting, as the Government furnishes but five per cent of their subsistence. The irrigation facilities are not only very unreliable, but are wholly inadequate to the needs of these Indians. Owing to their uncertainty they prefer to work for white farmers rather than to cultivate their own land, until provided with a reliable supply of water for irrigation. Efforts are being made to improve the present system. This should be done, as these Indians are worthy of some attention in this respect, and if done they will become entirely self-supporting.

The Walker River Reservation is in the western part of Nevada and has an area of 498 square miles, and in 1900 also had a population of 392 Paiute Indians. Walker Lake takes out a considerable part of the land. About one-third of the land is fit for agriculture. Like the other Indians of this tribe, they are industrious

and are slowly progressing toward civilization, making good farmers, stockmen, and laborers. The old and infirm are the only ones supported by the Government. They have been greatly benefited by the Walker River project, which has been constructed under the National Reclamation Act.¹ Their lands have not been allotted, but are parceled out to those who manifest a desire to cultivate them.

§ 280. **Irrigation by different tribes in New Mexico.**—*The Jicarilla Apache Reservation* is situated in the extreme northern part of New Mexico, and has an area of 650 square miles, and in 1900 had a population of 829. These Indians were formerly wild and nomadic, like the Indians of the plains, but have been caused, through the encroachment of the white man, to settle down and adopt the ways of civilization. From instruction at the hands of the Government they are learning to depend upon the products of the soil for their support. Some of their land can be cultivated without irrigation, but the greater portion of the land requires it. Their irrigation system is still crude, but by the aid of the Government it is being improved. The Government still furnishes a considerable portion of their support.

The Pueblo Reservations are 19 in number, and are scattered largely throughout the north central part of New Mexico. Strictly speaking, they are not reservations, being grants of the Spanish Government confirmed by United States patents, and their total area is 1,081 square miles, and in 1900 having a population of 6,602, being collected for the most part in villages or pueblos, usually located in the midst of their farm land. These Indians, contrary to the Apaches last mentioned, possessed a distinct civilization of their own. They tilled the soil and were a peaceable agricultural people long before the Spaniard set foot on the American continent. Though very poor they are practically self-supporting, requiring aid from the Government only in very dry seasons. No crops can be raised without irrigation, which has been practiced in a primitive manner from earliest times. Their systems of irrigation are crude, but in ordinary seasons furnish a water supply sufficient to mature crops. The majority of the Pueblo farmers have from 10 to 30 acres under cultivation, a few as high as 60 and 80 acres. The land

¹ See Fourth Annual Report of the National Reclamation Service, p. 266.

is not allotted, but parceled out to each head of a family, the community as a whole holding the title in common. At present their methods are very crude, and when they learn the value of improved machinery, their economic condition will undoubtedly be improved.

The Zuni Reservation is in the extreme western part of New Mexico, and has an area of 336 square miles, and in 1900 had a population of 1,525. These Indians are kind, peaceable, and industrious, having been always a self-supporting agricultural people. They irrigate in their primitive manner, and keep their ditches in good repair. Their farms range in size from 10 to 20 acres, with a few containing from 30 to 40 acres. A great deal of their land is in fruit, especially peaches. Under instructions of the Government their condition is being greatly improved.

§ 281. **Irrigation by different tribes in Oregon.**—Today, in the State of Oregon there exist the remnants of a large number of tribes, representing more than ten distinct linguistic stocks. Nearly all of the reservation Indians are self-supporting, the Government assisting only the aged, blind, and helpless.

Grande Ronde Reservation is situated in the northern part of the State, and has an area of something over 93 square miles, and in 1900 a population of 402. Approximately 10,000 acres of land can be cultivated. While irrigation is not in general practice, these Indians would be better off if it was. The majority cultivate from 10 to 80 acres, and some as high as 150 acres. A great deal of their land is in garden and fruit. They are almost entirely self-supporting.

The Klamath Reservation lies in the high plateau region of south central Oregon, east of the Cascade Mountains. It has an area of 1,650 square miles, and a population in 1900 of 1,136. On account of the altitude, which averages over 4,000 feet, early frosts make agriculture very uncertain, but with irrigation the arid uplands produce good forage crops. The able-bodied have been self-supporting for a number of years, the Government assisting only the aged and helpless.

The Siletz Reservation is in western Oregon, and has 80 square miles, and in 1900 a population of 479, which consists of the remnants of 31 different tribes. Nearly all of the land has been allotted. They are intelligent and industrious, and nearly all self-supporting.

Government rations consist of 6 per cent and annuity payments 12 per cent of their subsistence. Irrigation is not practiced to any considerable extent.

The Umatilla Reservation has an area of 123 square miles in the northeastern part of the State. The total population in 1900 was 1,397. The majority of the Indian farmers cultivate from 50 to 100 acres each. However, many of the Indians prefer to rent their lands rather than farm for themselves.

The Warm Springs Reservation is in the central part of the State, and has an area of 725 square miles, most of which is rough and mountainous. It is occupied by several tribes, and in 1900 had a population of 837. There is very little irrigation practiced.

§ 282. **Irrigation by different tribes in Utah.**—Outside of the Navajo Reservation, which has been mentioned in the description of the reservations of Arizona, Utah has two Indian reservations. These are the Uinta Valley and Uncompahgre Reservations, and both are in the eastern part of the State.

The Uinta Valley Reservation had in 1900 an area of 3,186 square miles, and in 1900 a population of 1,637, which also included the Indians on the Uncompahgre Reservation, which adjoins. The valley is well watered and timbered. The land is exceedingly arid and crops can only be raised successfully by irrigation. The Indians have just begun to realize that industry is essential to their existence, and a continual improvement is noticed. Many of the Indians have farms under cultivation, and a few cultivate over 100 acres. All of the crops are raised by irrigation, and there are approximately 65 miles of ditch. However, in 1900 the Government furnished 60 per cent of their subsistence.

The Uncompahgre Reservation has all been opened up for settlement with the exception of about 20 square miles, which has been allotted to the Indians, and a reserve of mineral land by the Government. Some of these Indians refused to accept their allotments and wandered off to the Cheyenne Reservation in South Dakota. On the reservation those who accepted their allotments are taking hold and cultivating their lands. Some of their farms compare favorably with those of the white farmers in the same vicinity. Still the Government furnishes 45 per cent of their subsistence and annuity payments provide 10 per cent more. The greatest trouble

with the Indians on both of these reservations has been to induce them to work. But this is being rapidly overcome. A little more fostering care of the Government in the construction of irrigation systems and instruction in the manner of cultivation of their lands will place these Indians upon a self-supporting basis.

§ 283. **Irrigation by different tribes in Washington.**—The Indian population of Washington, although not as large as that of several States, is composed of numerous tribes. Many tribes have taken up agriculture and nearly all are self-supporting.

The Colville Reservation is in the northwestern part of the State, and has an area of 4,374 square miles, and in 1900 a population of 1,477. The land is well adapted to agriculture and stock raising, and most of the tribes have made good progress along these lines. However, Chief Joseph's band of Nez Percé are not progressive, and receive 50 per cent of their subsistence from the Government. Nearly all of this land requires irrigation in order to produce good crops. However, there is plenty of water for this, should a good system be adopted. The Okanogan project, under the National Irrigation Act, is being constructed on the northwest of the reservation. This will undoubtedly be of some assistance to these Indians.

The Spokane Reservation lies to the east of the Colville Reservation, and has an area of 240 square miles. These Indians as a tribe are thrifty and industrious, good agriculturists, and with a little more assistance from the Government would become independent. At present the Government furnishes five per cent of their subsistence. Part of their land does not require irrigation, but the greater portion of it does. Steps are now being taken to improve their irrigation system.

The Lummi Reservation has an area of three square miles in the northwestern part of the State, and in 1900 a population of 359. These Indians are entirely self-supporting, mostly from agriculture. Their land needs very little if any irrigation to produce crops.

The Makah Reservation is in the northwest part of the State, and has an area of 36 square miles, and in 1900 a population of 371. These Indians are self-supporting, but very poor. They have no irrigation system, and do not need one.

The Muckleshoot Reservation is in the central western part of the State, and has an area of five square miles, and in 1900 had a popu-

lation of 146. They are agriculturists, but the land needs no irrigation. They are entirely self-supporting.

The Quinaielt Reservation is in the western part of the State on the Pacific Ocean, and has an area of 350 square miles, and in 1900 had a population of 193. They are agriculturists and fishermen and all self-supporting. No irrigation is necessary.

The Swinomish Reservation is in the northwestern part of the State, and has an area of 11 square miles, and in 1900 had a population of 275. They are agriculturists and fishermen, and self-supporting.

The Tulalip Reservation is also in the northwestern part of the State on Puget Sound, and has an area of 14 square miles. As a general rule they are not agriculturists. No irrigation is practiced.

The Yakima Reservation is in the south central part of the State, and has an area of 1,250 square miles, and in 1900 had a population of 2,219. They are agriculturists, and where irrigation is practiced are making splendid progress. Under the direction of a surveyor they have of their own accord constructed a large number of ditches. Under the National Irrigation Act the Government is constructing two projects near this reservation, the Yakima Valley and Tieton projects. Ditches are being constructed through the reservation, and the Indians will be greatly benefited.¹ These Indians are entirely self-supporting and accumulating property. The lands have been allotted, and many of these Indians have large farms and comfortable homes.

§ 284. **Irrigation by different tribes in Wyoming.**—The only reservation in Wyoming is that of the Shoshone, which is located in the west central part of the State, and has an area of 2,868 square miles, and in 1900 had a population of 1,961. The Indians are of two tribes, the Shoshone or Snake Indians, and the Arapaho. The two tribes are nearly equal in number, but live entirely separate. Both tribes are peaceable, but their progress toward civilization has been exceedingly slow. The Government aid constitutes 75 per cent of their subsistence, and annuity payments 12 per cent. During the last few years they have taken a greater interest in agriculture. All of their land is exceedingly arid, and irrigation is necessary to

¹ See Fourth Annual Report of the Reclamation Service, 1904-1905, pp. 337, 340.

raise crops. Since 1900 the Government has given considerable aid in the construction of adequate irrigation systems. Several canals over five miles in length have been constructed, in addition to many miles of ditching constructed by the Indians individually. The Government is now constructing what is called the Shoshone project under the National Reclamation Act.¹ These Indians will be greatly benefited when this project is completed.

§ 285. **The effect of irrigation upon the Indian.**—From many years of serious experience, this Government has finally discovered that the old method of herding a tribe or different tribes of Indians upon a common reservation and furnishing the greater portion of their subsistence was only retarding the civilization of the Indian, besides being annually a great expense. And, in addition to this, the Indians are like other people; where they are constantly kept together and under restraint, and with nothing to do to keep them busy, they continually brood over and discuss their real or fancied wrongs, and are oftener subject to outbreaks. At such times it has been hard to keep them upon their reservations; and oftentimes the soldiers have been called out to round them up and to force them to go back. These outbreaks have oftentimes caused loss of life and property; and, in addition to this, have had a bad effect generally upon the Indians themselves. Indians are like other human beings. Try to keep them in subjection by herding them together upon a common reservation and they either revolt or lapse into that sullen attitude and compel the Government to wholly support them. But give an Indian something to do, by which he can make a livelihood, and not be responsible to the general tribe for his earnings, and he will usually make a good workman, and sometimes save money.

The more modern policy of this Government in the treatment of the Western Indians by making them individual allotments of land, and, if need be, furnishing water for the same, and teaching them the modern methods of irrigation and agriculture, has done more toward their civilization during the last twenty years than was accomplished during all of the time prior to that period. As long

¹ See Second Annual Report of the Reclamation Service, pp. 507-510; Third Annual Report, 2d Ed., pp. 626-631; Fourth Annual Report, pp. 346-350.

as an Indian adheres to his tribal relation, and lives upon a common reservation, he in a way will depend more or less upon the Government for his support. But give a Western Indian a piece of land with a good water right, and let him know that they belong to him, and that his rights thereto will be protected, in others words, make it possible for him to make a good living, and he will usually do so. Individual ownership of land, individual rights and responsibility under the laws, and citizenship eventually, have practically civilized what were formerly some of the most savage Indians of the West. So, in spite of anything which may be said to the contrary, there are different methods of making a "good Indian."

In the report of the Commissioner of Indian Affairs to the Secretary of the Interior for the fiscal year ending June 30, 1911, is to be found the following:¹ "During the past year the efforts of the 6,000 persons who are in the Indian Service have been more harmoniously, intensively, and vigorously employed than ever before in preparing the Indians to assume their full responsibilities as Americans, the chief of which is self-support. There is nothing derogatory to previous years in this statement, because the fruits of the past year are the result, in some cases, of months, but in more cases of years, and of many years of growth. All activities employed in this steadily increasing encouragement of the Indians toward self-support are governed by the two main aims of the service—first, to prepare the Indians for the lifting of the Government's hand, and second, to lift the hand. The first aim covers all the things we are trying to do to prepare the Indians to bear their new responsibilities. Luckily the day has gone by when the sink-or-swim policy is the central idea in a great economic and sociological problem like Indian affairs; even more luckily the day has passed when an excess of sentiment could defend its position in robbing any human being of that strengthening process of mind and muscle which comes from bearing heavier and heavier, and often seemingly impossible, loads. In fine, we are working overtime to get the Indians ready. Under the second head comes the problems of how to let go, where Indians in one way or another have grown self-sufficing."

¹ P. 5.

PART III.

CLASSIFICATION, DEFINITIONS, AND THE NATURE OF WATERS.

CHAPTER 13.

CLASSIFICATION AND NATURE OF RUNNING WATERS.

§ 286. Scope of chapter.

§ 287. The classification of waters.

§ 288. The nature of running waters under the civil law.

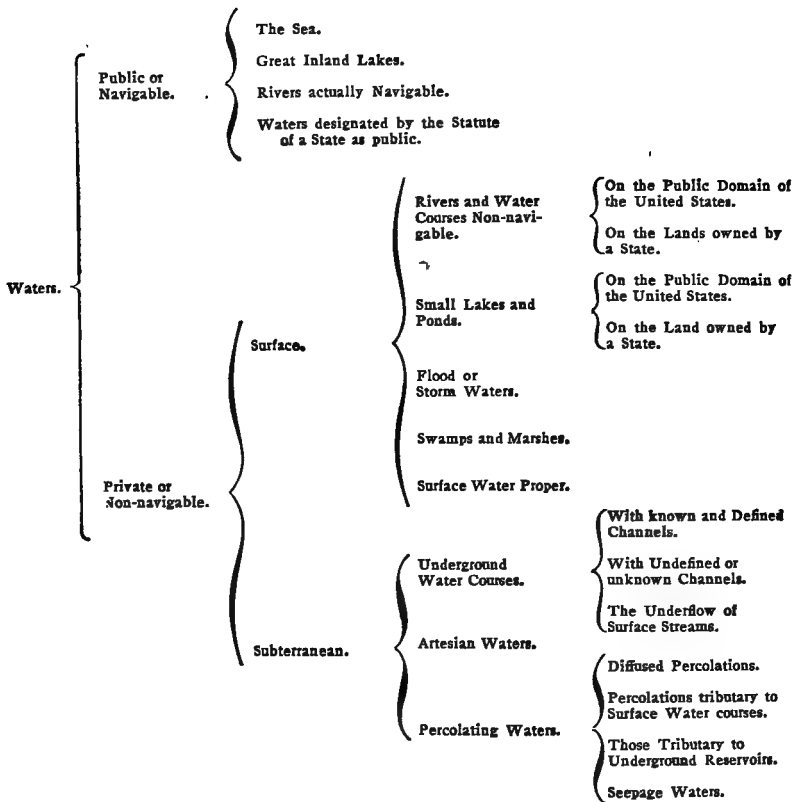
§ 289. The nature of running waters under the common law.

§ 290. Public and private waters—Public waters.

§ 291. Private waters.

§ 286. **Scope of chapter.**—In this chapter we will classify the various running waters of the earth as far as may be necessary for the purposes of this work. We will also discuss, in a general way, their nature and the ownership which may be acquired in running waters.

§ 287. **The classification of waters.**—For the purposes of this work waters may be divided into the following classes:



§ 288. The nature of running waters under the civil law.— Without going into any lengthy discussion upon the subject of the nature of running waters under the civil law, which is only necessary from an academic standpoint, we will say that, under the Roman civil law, the running waters were considered as some of those things which had the name of *res communes*, and which under that law is termed by the civil law writers as “the negative community,” and defined as the “things the property of which belongs to no person.”¹ In the Institutes of Justinian, as translated by the Supreme Court of California, “they are the property of some one

¹ *Liggins v. Inge*, 7 Bing. 692, 5 Moore & P. 712, 9 L. J. C. P. 202; *Geer v. Connecticut*, 161 U. S. 519, 40 L. Ed. 793, 16 Sup. Ct. Rep. 600.

or no one.”² And, as translated from Prothier, the great French civil law writer, by the Supreme Court of the United States: “These things are those which the juris-consults called *res communes*. Marcien refers to several kinds—the air, the water which runs in the rivers, the sea and its shores.”³ And, as summed up in the Code Napoleon: “There are things which belong to no one, and the use of which is common to all.”⁴ The English common law adopted from the civil law this construction of *res communes*, but with the elimination of the “negative community” idea. In other words, it is held that such things as the air and running water are common property to all; that they belong to the State, the Crown, or to the public.⁵ The civil law of waters so far as it concerns the subjects under discussion in this work will be discussed in other chapters.⁶

§ 289. **The nature of running waters under the common law.**—Under the common law, the running waters of the earth are neither lands, tenements, nor hereditaments, nor are they susceptible of absolute ownership. Water under this condition is a movable, wandering thing, and must of necessity continue common by the law of Nature.¹ It admits only of a temporary, transient, usufructuary property therein; and, if it escape for a moment, the right of a former possessor is gone forever, and he has no right to reclaim it. It is not capable of being sued for by the name of “water,” or by calculation of its cubical or superficial measure, but the suit must be brought for the land that lies at the bottom, for so many acres of land covered by water.² The grant of a

² *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

³ *Geer v. Connecticut*, *supra*; Prothier, *Traité du Droit de Propriété*, No. 21.

See, also, *Mason v. Hill*, 5 Barn. & Adol. 1, 2 Nev. & M. 747, 2 L. J. K. B. N. S. 118; 110 Eng. Reprint, 692; *Ohio Oil Co. v. Indiana*, 177 U. S. 190, 44 L. Ed. 729, 20 Sup. Ct. Rep. 576, 20 Morr. Min. Rep. 466; affirming *Id.*, 150 Ind. 698, 50 N. E. Rep. 1125.

⁴ Code Napoleon, Art. 714.

For the Civil Law, see Chaps. 29, 30, Secs. 552-584.

For the Common Law of Riparian Rights, see Chaps. 21-28, Secs. 450-551.

⁵ See next Sec. 289.

⁶ See Chaps. 29, 30, Secs. 552-584.

¹ That a water right is land, under the Arid Region Doctrine of appropriation, see Secs. 768-771.

For the Common Law of Riparian Rights, see Chaps. 21-28, Secs. 450-551.

² 2 Blackstone, Com. 18, and note; Runninton on Eject. 131.

In *Race v. Ward*, 4 El. & Bl. 708, 3. C. L. Rep. 744, 24 L. J. Q. B. N. S.

stream of water *eo nomine* will not pass the land over which the water runs.³ Upon the other hand, the grant of a parcel of land passes the property in a stream of water which runs over it, as much as it does the property in the stones upon the surface.⁴ As water is not land, neither is it a tenement, because it is not of a permanent nature, nor the subject of absolute property, unless reduced to actual possession. Hence, water, being neither land nor tenement, and in no possible sense real estate, is not embraced by a covenant of warranty.⁵ However, when water is reduced to actual possession, it is property, and may be bought and sold, and have a market value; but it must be in actual possession, subject to control and management. Running water in natural streams is not property, and never was.⁶ Even a government has no property in the *corpus* of the water while it is running in the natural streams. As was said in an early California case relative to property in the *corpus* of the water, "No such property is vested in the Government."⁷

§ 290. **Public and private waters—Public waters.**—The waters of the earth are divided by the authorities into two main classes,

153, 1 Jur. N. S. 704, 3 Wk. Rep. 240, Lord Campbell, C. J., said that an action for taking water, the property of the plaintiff, could not be supported unless the water were contained in a cistern or some other vessel in which he had placed it for his private use.

See, also, Year Book, Trin., 15 Ed. 4, fol. 29 A. pl. 7; Weekly v. Wildman, 1 Ld. Ray. 407; Manning v. Wasdale, 5 Ad. & El. 758, 1 Nev. & P. 172, 2 H. & W. 431, 6 L. J. K. B. N. S. 59; Blewett v. Tregonning, 3 Ad. & El. 554, 5 Nev. & M. 234, 1 H. & W. 431, 47 L. J. K. B. N. S. 223; Challenor v. Thomas, Yelv. (Metcalf's Ed.) 143; Woolrych, Law of Waters, 276, 295; Coke, Litt. 5; Johnson v. Rayner, 6 Gray, 107; Owen v. Field, 102 Mass. 90.

³ Jackson v. Halstead, 5 Cow. 216; Egremont v. Williams, 11 Q. B. 688.

⁴ Buckingham v. Smith, 10 Ohio, 288; Brown v. Kennedy, 5 H. & J. 195, 9 Am. Dec. 503; Canal Comrs. v. People, 5 Wend. 423; Elliott v. Fitchburg R. Co., 10 Cush. 191, 57 Am. Dec. 85.

⁵ Mitchell v. Warner, 5 Conn. 497; see, for Water Rights, Secs. 757-774; see Water Courses, Secs. 301-311.

⁶ Syracuse v. Stacey, 169 N. Y. 231, 62 N. E. Rep. 354; but see ownership in ice, Riparian Rights, Sec. 493; Marsh v. McNider, 88 Iowa, 390, 55 N. W. Rep. 469, 20 L. R. A. 333, 45 Am. St. Rep. 240; as to the right of fishing, see Riparian Rights, Sec. 365.

See, also, Rockfeller v. Lamora, 83 N. Y. Supp. 289, 85 App. Div. 254.

⁷ Kidd v. Laird, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571.

designated as public and private waters.¹ The classification formerly depended upon the fact as to whether the waters were navigable or nonnavigable.² Under the common law, waters are deemed public only where the tide ebbs and flows, the proprietorship of which being in the sovereign. This is so for the reason that under that law waters are deemed navigable only to the extent of tidal waters; all waters above the reach of the tide are considered as nonnavigable, and hence private waters.³ In England, as was said in the case of *The Genesee Chief v. Fitzhugh*,⁴ "Tide waters and navigable waters are synonymous terms, and tide water, with a few small and unimportant exceptions, meant nothing more than public rivers, as contradistinguished from private ones"; and writers on the subject "took the ebb and flow of the tide as the test, because it was a convenient one, and more easily determined the character of the river." But in this country, owing to the great size of our rivers, the rule as to public waters has been greatly extended so as to include all waters which are actually navigable, even though they are above tide waters. Hence it follows that all rivers and streams, which are of sufficient capacity for useful navigation, are public, and are subject to the same general rights which the public exercise in highways by land.⁵

The same rule governs in the distinction between public and private lakes and ponds. If the lake is navigable in fact, its waters and bed belong to the State, in its sovereign capacity, and hence they are public waters.⁶ In fact, the division of waters into navigable and nonnavigable is merely a method of dividing them into

¹ See classification, Sec. 287.

² For Navigable Waters, see Chap. 16, Secs. 346-349.

³ *Cobb v. Davenport*, 32 N. J. Law (3 Vroom) 369.

⁴ 53 U. S., 12 How. 443, 13 L. Ed. 1058.

⁵ *Illinois C. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

For Rights of Navigation, see Secs. 341-357; *Lorman v. Benson*, 8 Mich. 18, 77 Am. Dec. 435; *Carter v. Thurston*, 58 N. H. 104, 42 Am. Rep. 584.

⁶ *Lamprey v. Metcalf*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Concord Mfg. Co. v. Robertson*, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679, and note; *Gouverneur v. National Ice Co.*, 134 N. Y. 355, 31 N. E. Rep. 865, 18 L. R. A. 695, and note, 30 Am. St. Rep. 669; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

As to the ownership of the beds of great lakes, see Secs. 327, 328.

public and private waters, which is the more natural classification.⁷ In the Western States of this country, during the last twenty-five years another class has been added to the so-called public waters. These are the waters which have been dedicated to the State or public either by constitutional provision or by statutory enactment. In these States which have such provisions the waters flowing within their respective boundaries belong to the State or to the public, and, therefore, may properly be designated as public waters. This dedication of waters to a State will be discussed in a subsequent chapter.⁸

In this country, therefore, public waters include the sea,⁹ the great inland lakes,¹⁰ rivers actually navigable,¹¹ and waters which are designated by the constitution or statute of a State as public.¹²

§ 291. **Private waters.**—At common law private water courses and other bodies of water are not navigable, and the general public have no rights in them. To this class of water courses belong that vast number of inland fresh-water, nonnavigable rivers and streams that are to be found in every portion of this country, emptying their waters into the larger rivers and streams, which in turn empty into the sea. It is with this class of rivers and streams that our main subject has most to deal. They are the feeders and sources of the large rivers, and their general characteristics are the same in all respects. They have beds and the water; but they have banks instead of shores. The banks are often more definitely marked, and usually elevated to a greater height than is the case of the shores of tidal rivers. The current always flows in the same direction, which is different in a river whose current is influenced by the tide. And, except in times of great freshets or extraordinary floods, the water does not rise high enough to overflow their banks. However, these fresh-water, nonnavigable rivers, although not subject to the daily fluctuations of the tide, may rise and fall periodically at certain seasons of the year, and thus have well-defined

⁷ *Lamprey v. Metcalf, supra.*

⁸ See Chap. 18, Secs. 372-389.

⁹ For definition and description, see Sec. 293.

See, also, the classification under Sec. 287.

¹⁰ See Sec. 295.

¹¹ See Secs. 344-347.

See, also, Chap. 16, Secs. 341-357.

¹² See Chap. 18, Secs. 372-389.

high and low water marks. The high water mark is the line which the river impresses upon the soil by covering it for periods sufficient to deprive it of vegetation and to destroy its value for agriculture. The low water mark is the point to which the river or stream recedes at its lowest stage.

In this country there is one exception to the common law distinction between public and private waters, and that is in the Western States, which have dedicated all of the waters flowing or lying on their respective boundaries to the State or public, referred to in the previous section.¹ In such a case the waters of a small non-navigable stream are as much public waters as are those of a stream which are actually navigable.² Therefore for the purposes of this work, disregarding the above distinction, which will be fully discussed in another chapter,³ private or nonnavigable waters are divided into the general divisions of surface and subterranean waters. Surface waters are again subdivided into the following classes: Rivers and water courses nonnavigable,⁴ small lakes and ponds,⁵ flood or storm waters,⁶ swamps and marshes,⁷ and surface water proper.⁸ Subterranean waters are also divided into the following general classes: Underground water courses,⁹ artesian waters,¹⁰ and percolating waters.¹¹ Underground water courses are again divided into the following subdivisions: Those having known and defined channels,¹² those having unknown or undefined channels,¹³ and the underflow of surface streams.¹⁴

Owing to the recent scientific investigations and the court decisions based thereon what were formerly classed as percolating waters, without any distinction as to class, are now divided into the following classes: Diffused percolations,¹⁵ percolations tributary to surface water courses,¹⁶ those tributary to underground reser-

¹ See Sec. 290.

See, also, Secs. 372-389.

² For the dedication of waters to a State, see Secs. 372-389.

³ For the Dedication of Waters, see Chap. 18, Secs. 372-389.

For classification, see Sec. 287.

⁴ See Secs. 301-311.

⁵ See Sec. 297.

⁶ See Sec. 319.

⁷ See Sec. 317.

⁸ See Sec. 318.

⁹ See Sec. 323.

¹⁰ See Secs. 1166-1184.

¹¹ See Secs. 1185-1211.

¹² See Secs. 1154-1163.

¹³ See Secs. 1164, 1185-1211.

¹⁴ See Secs. 1161-1163.

¹⁵ See Secs. 1188-1190.

¹⁶ See Secs. 1193-1196.

voirs or catchment basins,¹⁷ and seepage waters.¹⁸ These subjects will all be discussed in subsequent sections of this work.¹⁹ The right to waters after they have been severed from the running streams or other sources of water supply will also be discussed in subsequent chapters of this work.²⁰

¹⁷ See Secs. 1197-1205.

¹⁸ See Secs. 1207, 1208.

¹⁹ See notes above.

For Subterranean or Underground

**Waters, see Part 10, Chaps. 59-62,
Secs. 1148-1211.**

* ²⁰ See Secs. 773, 774.

CHAPTER 14.

DEFINITIONS AND DESCRIPTION OF WATERS.

- § 292. Scope of chapter.
- § 293. The sea—Jurisdiction—Shore.
- § 294. Lakes—Definition—Description.
- § 295. Great lakes.
- § 296. Lakes—Public and private.
- § 297. Small lakes—Distinction between lakes and water courses.
- § 298. Ponds—Definition and description.
- § 299. Ponds—Colonial "great ponds."
- § 300. Pools—Definition and description.
- § 301. Natural water courses—In general—Definition.
- § 302. Water courses—General characteristics.
- § 303. Water courses—Essential characteristics of—The channel.
- § 304. Water courses—Essential characteristics—The bed.
- § 305. Water courses—Essential characteristics—The banks.
- § 306. Water courses—Essential characteristics—The current or flow.
- § 307. Water courses—At times may be dry.
- § 308. Rivers as water courses.
- § 309. Streams as water courses.
- § 310. Creeks, brooks, and rivulets as water courses.
- § 311. Tributaries to natural water courses.
- § 312. Ravines as natural water courses—"Wet weather arroyos."
- § 313. Springs and their relation to water courses.
- § 314. Swales and their relation to natural water courses.
- § 315. Sloughs as natural water courses.
- § 316. Artificial water courses.
- § 317. Swamps and marshes.
- § 318. Surface waters proper.
- § 319. Flood or storm waters.
- § 320. "Developed water"—Description of.
- § 321. "Surplus waters"—Definition and description.
- § 322. "Waste water"—Definition and description.
- § 323. Subterranean or underground waters—Classification.

§ 292. **Scope of chapter.**—As different laws apply to different classes of waters, it is necessary to know of what those classes consist. Therefore in this chapter we will define the various classes of waters and give a brief description of the same as far as pertinent to the main subject of this work.

In this chapter, however, we will simply classify subterranean or underground waters, leaving their description and a discussion as

to the rights which may be acquired therein to a subsequent part of this work.¹

The subject of navigable waters will also be fully discussed in a separate chapter, as far as that subject relates to the main subject under discussion in this work.²

§ 293. **The sea—Jurisdiction—Shore.**—The sea is the first of importance of the public or navigable waters. As the present work will have very little to do with the sea, but slight reference need be made to it here. It is the ocean, the great mass of water which surrounds the land, and which probably extends from pole to pole, covering nearly three-quarters of the globe. Waters within the ebb and flow of the tide are considered the sea.¹ A very large body of salt water communicating with the ocean is also called a sea, as the Mediterranean Sea. Also a very large inland body of salt water is called a sea, as the Caspian Sea. The high seas include the whole of the seas below high water mark and outside of the body of the country.² In modern times, the ownership of the sea is common to all nations, and any nation or person has ordinarily an equal right to navigate or fish therein, and to land upon the sea shore.³ We are accustomed to regard the territorial limits of any country bounded by the ocean at the shore line. This is not always the case, and, while it is true, as a general conception, that the sea is under no nation's sway, yet, by a common usage, which has long since passed into international law, the territorial jurisdiction of every nation bordering on the sea extends to a distance of one marine league from the shore. This limit of sovereign jurisdiction has been established to secure defense, to prevent smuggling, to prevent criminals from hovering upon the coast, to prevent crime; and, generally speaking, jurisdiction over the contiguous sea territory exists for the security of the adjacent State and its people.⁴

¹ For Subterranean or Underground Waters, see Chaps. 59-62, Secs. 1148-1211.

For the classification of subterranean waters, see Secs. 287, 1152.

² For Navigable Waters, see Chap. 16, Secs. 341-357.

³ Bouvier Law Dic., Sub. Sea; 1 Kent Com. 26, 27; Angell on Tide

Waters, 44; Hale, De Jure Maris; Gould on Waters, 3d Ed., Secs. 1-29.

⁴ Couls. & Forbes on Waters, Sea, Tidal and Inland.

³ 1 Bouvier, Inst. 173.

⁴ Manchester v. Massachusetts, 139 U. S. 240, 35 L. Ed. 159, 11 Sup. Ct. Rep. 559.

The jurisdiction of a nation also

Beyond that the sea is like the air; it is no man's possession; it is no nation's territory; it rolls ungoverned by human ordinance except as to the ships thereon, and they are floating tracts of nationality.⁵

The shore or *litus* of the sea has been defined as the tract of land which may be a parcel of a manor, but is *prima facie* in the Crown, lying along the tide water over which the tide flows between the ordinary high tide and the line of lowest tide.⁶ The presumption is that the shore belongs to the Crown or State, and the burden of proof is upon those who claim below the high water mark.⁷ The words "flats," "strand," "beach," "waste," and "tide-lands" are at times used as terms synonymous with the word "shore."⁸ In this connection there is a distinction which must be noted between the word *litus* or shore, and the word *ripa* or bank, the former being the land, which is covered and uncovered by the flow and reflow of the tide, and the latter being the dry land above the flow of the tide. The word bank is also applied to the side of a river or other

extends to gulfs and bays, if they are practically separated from the sea by the configuration of the coast.—Hall on Int. Law, Sec. 41; Direct U. S. Cable Co. v. Anglo-American Tel. Co., 2 App. Cas. 394.

⁵ 1 Kent Com. 26, 29-31; U. S. v. Rodgers, 150 U. S. 249, 37 L. Ed. 1071, 14 Sup. Ct. Rep. 109; Davis on Int. Law, 37.

See, also, upon the question of the jurisdiction over the sea: Phillimore on Int. Law, p. 186; Bowyer, Modern Civil Law, p. 64; Vattel, Law of Nations, Bk. 1, Chap. 23; Bynkershoek, Qu. Pub. Juris, 61; 1 Azuni, Marit. Law, 185, 204; Selden, Mare Clausum, Bk. 1, Chap. 19; Ulpian, Bk. 2, Chap. 30; Ortolan, Diplomatie de la Mer, liv. 2, Chap. 8; Calvo, Droit International, liv. 5, Secs. 199-201; The Twee Gebroeders, 3 C. Rob. 336; The James G. Swan, 50 Fed. Rep. 108; U. S. v. The Jane Gray, 77 Fed. Rep. 908; Woolrych on Waters, p. 77.

⁶ Hall, Seashore, 9; 1 Farnham on Waters, Sec. 45c; Galveston City Surf Bathing Co. v. Heidenheimer, 63 Tex. 559; Mobile v. Eslava, 9 Port. (Ala.) 597, 33 Am. Dec. 325; Maynard v. Puget Sound Nat. Bank, 24 Wash. 455, 64 Pac. Rep. 754; Snow v. Mt. Desert Island Real Estate Co., 84 Me. 14, 24 Atl. Rep. 429, 17 L. R. A. 280, 30 Am. St. Rep. 331; Erskine v. Moulton, 66 Me. 276; King v. Young, 76 Me. 76, 49 Atl. Rep. 596; Stevens v. King, 76 Me. 197, 49 Am. Rep. 609; Providence Steam Engine Co. v. Providence etc. Co., 12 R. I. 348; 34 Am. Rep. 652; Church v. Meeker, 34 Conn. 421; Storer v. Freeman, 6 Mass. 435, 4 Am. Dec. 155.

⁷ Royal Fishery of the Banne, Sir John Davies, 149; Gould on Waters, 3d Ed., Sec. 27, and cases cited; 1 Farnham on Waters, Secs. 45c-47a, and cases cited.

⁸ Gould on Waters, 3d Ed., Sec. 28, and cases cited.

water course and is further discussed in another section of this chapter.⁹

§ 294. **Lakes—Definition—Description.**—There are various definitions of the word "lake," found in the dictionaries, text books, and court decisions. None of these definitions seem to be complete, but from them all we may formulate one. A lake may be defined as a natural body of water, fresh or salt, occupying a basin or hollow of the earth, of greater or less depth and area, and may or may not have a current or single direction of flow.¹ Usually, however, they are bodies of standing water with no current, or an imperceptible one, with some portion of their bottoms below the bottoms of their outlets. But the mere fact that there is a current from a higher to a lower level does not make that a river or water course which otherwise would be a lake; so, also, the fact that a river swells out into a broad, pond-like sheet, with a current, does not make that a lake which otherwise would be a river.² Some lakes have no surface outlet at all, notably Great Salt Lake, a body of exceedingly salt water eighty miles in length and sixty miles in width.³

Whether or not a certain body of water is a lake is a question of fact to be submitted as such to the court or jury. In a recent case in California it was held that an objection to a question asked expert witnesses, whether, in their opinion, a certain body of water is a lake was well taken, upon the ground, the facts and conditions having been fully described, the matter was not properly the subject of expert testimony.⁴

⁹ For the essential characteristics of a natural water course, see Secs. 303-306.

¹ See *Jones v. Leë*, 77 Mich. 35, 43 N. W. Rep. 855; *Ne-pee-nauk Club v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661.

Lake—A large and extensive collection of water contained in a cavity or hollow of the earth. It is larger than a pond.—Webster.

Lake—A large inland body of water having no immediate connection with the sea.—Worcester.

The Roman jurist, Ulpian, defines

a lake as a body of perpetual water.—Ware, *Roman Water Law*, Sec. 59.

² See *Callis on Sewers*, 82; *Woolrych on Sewers*, 81; *Angell on Water Courses*, 1878, Sec. 4f; *State v. Gilmanon*, 9 N. H. 461, 14 N. H. 476; *Bassett v. Salisbury Mfg. Co.*, 43 N. H. 569, 82 Am. Dec. 179; *Rice v. Ruddiman*, 10 Mich. 125; *Phinney v. Watts*, 8 Gray, 269, 69 Am. Dec. 288.

³ Under the civil law, according to Ulpian, a lake, a pond, or a canal may be public.—Ware, *Roman Water Law*, Sec. 59.

⁴ *Duckworth v. Watsonville etc. Co.*,

The principal distinction between a lake and a water course is that a lake is a body of practically standing water, while one of the principal characteristics of a water course or stream is that there must be a flow of running water.⁵

§ 295. **Great lakes.**—Great inland lakes come under our classification of public navigable waters, concerning which this work has little to do, and a passing notice in this connection will suffice.¹ In this country great navigable lakes are regarded as public property, and are not susceptible of private ownership any more than the sea.² Hence, under our laws, the title to these great bodies of navigable water remains in the public, and it requires a specific grant to enable a person to maintain a claim to title to either the bed of the lake or to the body of the water itself.³ When a lake lies between two countries or nations, the boundary line between them runs along its middle line, and each nation has title to that portion of the lake on its side of the line.⁴ This rule may be changed by treaty,⁵ or by cession by the sovereign owners. The three-mile limit

158 Cal. 206, 110 Pac. Rep. 927; *Id.*, 150 Cal. 520, 89 Pac. Rep. 338.

For the appropriation of water from lakes, see Sec. 650.

For riparian rights on lakes, see Secs. 474, 475.

⁵ For the essential characteristics of a water course, see Secs. 303-306.

See, also, *Duckworth v. Watsonville etc. Co.*, *supra*; *Ne-pee-nauk Club v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661; *Trustees of Schools v. Schroll*, 120 Ill. 509, 12 N. E. Rep. 243, 60 Am. Rep. 575. See, also, small lakes, Sec. 297.

¹ For the definition of the word "lake," see Sec. 294.

² 3 Kent Com., note, 429a.

The term "high seas," as used in Sec. 5346, Rev. Stat. of the U. S., 1878; 1 Fed. Stat. Ann. 1905, p. 511, is applicable to the open, unenclosed waters of the Great Lakes. *U. S. v. Rodgers*, 150 U. S. 249, 37 L. Ed. 1071, 14 Sup. Ct. Rep. 109.

See, also, *The Genesee Chief v. Fitzhugh*, 53 U. S., 12 How. 443, 13 L. Ed. 1058; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Mali v. Hudson County Jail Keeper* ("Wildenhuis's Case"), 120 U. S. 12, 30 L. Ed. 566, 7 Sup. Ct. Rep. 385; *Halleck, Int. Law*, Chap. 8, p. 172, Sec. 26.

³ As to title to beds of lakes, see Sec. 327.

See *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 838.

⁴ *Vattel*, Law of Nations, Book 1, Chap. 22; *Thorson v. Peterson*, 10 Biss. 530, 9 Fed. Rep. 517; *The Sultana v. Chapman*, 5 Wis. 463.

⁵ See *U. S. v. Peterson*, 64 Fed. Rep. 145. By a treaty between the United States and Great Britain the boundary was fixed at a certain line through Lake Huron.

as being the boundary of the respective countries is not applicable to lakes.⁶ The navigation of a lake of this character is open to both countries, but each may enforce its own laws as far as its territorial limits go.⁷ Concurrent jurisdiction over the whole body of such a lake is asserted by each nation and accorded by the other.

§ 296. **Lakes—Public and private.**—As has been said, small lakes are distinguishable from large lakes as far as their general characteristics are concerned only in size; yet the laws which govern them and the soil under their waters are radically different. The distinction in this country between public and private lakes depends in most States entirely upon the size and navigability of the particular lake and its relation to other waters which flow into it or with which it is connected. Hence, it follows that a lake which is not actually useful for navigation, although of considerable size, may be termed a private lake and be private property.¹ Upon an examination of the authorities upon this subject, it will be found that they hold differently in different States; some holding that the

⁶ *Biglow v. Nickerson*, 70 Fed. Rep. 113, 17 C. C. A. 1, 34 U. S. App. 261, 30 L. R. A. 336; *The Grace*, 4 Can. Exch. 283; *Illinois C. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Dunlap v. Commissioners*, 108 Pa. 607.

⁷ *Edson v. Crangle*, 62 Ohio St. 49, 56 N. E. Rep. 647; *The Norway v. Jensen*, 52 Ill. 373; *Dougan v. Champlain Transp. Co.*, 56 N. Y. 1.

¹ In *Smith v. New York*, 68 N. Y. 552, it was held that, by statute, the State's title to its navigable waters is in trust for the owners of the upland as well as for the public, and the State can only convey the soil under such water, whether they are lakes or tide waters, to the owner of the adjoining land.

In *Cobb v. Davenport*, 32 N. J. L. 369, 380, it was held that the soil under the waters of fresh water lakes within the State of New Jersey is in the riparian proprietor and not in the State.

In Pennsylvania, a pond is not a private pond which covers the soil of a person who stocks it with fish and also the soil of others. It is an entirety, and the whole or none is private.—*Reynolds v. Commonwealth*, 93 Pa. St. 458.

See, also, *Benscoter v. Long*, 157 Pa. St. 208, 27 Atl. Rep. 674; *Heath v. Williams*, 25 Me. 209, 43 Am. Dec. 265; *Rumsey v. New York etc. R. Co.*, 114 N. Y. 423, 21 N. E. Rep. 1066; *Id.*, 125 N. Y. 681, 25 N. E. Rep. 1080; *Id.*, 130 N. Y. 88, 28 N. E. Rep. 763; *Wright v. Eldred*, 46 Hun, 12; *Hodges v. Williams*, 95 N. C. 331, 59 Am. Rep. 242; *Ledyard v. Ten Eyek*, 36 Barb. 102; disapproved in *Gouverneur v. National Ice Co.*, 57 Hun, 474, 11 N. Y. Supp. 87; *Rev'd in 134 N. Y. 355*, 31 N. E. Rep. 865, 18 L. R. A. 695, 30 Am. St. Rep. 669; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Trustees of Schools v. Schroll*, 120 Ill. 509, 12 N. E. Rep. 243, 60 Am. Rep. 575.

riparian owner whose lands adjoin an inland lake or pond takes only to the water's edge at low water mark, and others that he takes to the center of the lake or pond.

But with lakes of this class which are actually navigable, as with rivers,² the public have the right of navigation, paramount to all other rights of riparian owners, if they are needed and used for that purpose. And this right of navigation must not be disturbed either by drainage of the lake or by obstructions in the same.³ This alike is the rule of the civil law,⁴ and the common law of England.⁵

Also under the American law, as a part of the common law of the country, arising out of public necessity, convenience, and common consent, the public have the right to use the rivers and lakes and all parts of them for navigation, although they are not strictly private waters. If they are actually navigable in fact they are subject to this right of the public for the purpose of highway and navigation when they can be employed in travel, trade, or commerce. Such waters are treated as *publici juris* in so far as they may be properly used for such purposes in their natural state. The public right, however, arises only in case of their navigability. And whether they are navigable or not depends entirely upon their capacity for a substantial use for that purpose.⁶

² For navigable rivers, see Secs. 343-346.

For the protection of the navigable capacity of waters, see Secs. 347-357.

³ The title to the bed of the river, lake, or sound in such cases, and all special privileges and advantages incident thereto may vest and remain in the owner thereof, subject only to the public right of navigation. He may use the land and whatever is incident to it, including the water over it, in such lawful ways as he will. The limited right of the public is paramount and must not be abridged.—*State v. Narrows Island Club*, 100 N. C. 477, 5 S. E. Rep. 411, 6 Am. St. Rep. 618; *Broadax v. Baker*, 94 N. C. 678, 55 Am. Rep. 633; *Hodges v. Williams*, 95 N. C. 331, 59 Am. Rep. 242, distinguishing *State v. Glenn*, 7 Jones (N. C.), 321.

⁴ *Monongahela Bridge Co. v. Kirk*, 46 Pa. 112, 84 Am. Dec. 527; *Gaston v. Mace*, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848; *Goodwill v. Police Jury*, 38 La. Ann. 752.

⁵ *Smith v. Andrews*, 2 Ch. 678, 65 L. T. N. S. 175; *Grant v. Oxford Local Board*, L. R. 4, Q. B. 9, 38 L. J. M. C. N. S. 39, 19 L. T. N. S. 378, 17 Week. Rep. 76; *Woolrych on Waters*, p. 40; *Higgins on Water Courses*, 73; *Hale, De Juris Maris*, Ch. 3; *Phear, Water Rights*, 13, 41.

⁶ See 1 *Farnham on Waters*, Sec. 23, and the cases cited.

For the protection of navigation, see, also, Chap. 16, Secs. 341-357.

For riparian rights, see Chaps. 21-28, Secs. 450-551.

§ 297. **Small lakes—Distinction between lakes and water courses.**—It is with small lakes and the rights to the waters therein that this work has more to do.¹ Our general definition of lakes is broad enough to include small lakes. These lakes differ in no respect from great lakes, except as to size and, usually, navigability. The question of navigability usually determines the extent of the rights of riparian owners, which will be discussed in a subsequent chapter of this work.²

The courts have been called upon to distinguish between water courses and lakes.³ The weight of authority is to the effect that, if water of a stream or water course spreads out so that the current becomes imperceptible or is entirely lost, it becomes a lake or pond, and is no longer a water course. So, it is held, that a small stream which spreads out into a body of water varying from 35 to 65 rods in width and with a length of three miles, which after heavy rains is filled with water, but during the dry season the water disappears and it becomes a bog or marsh, here and there covered with water and a growth of wild vegetation, navigable in ordinary stages only with canoes and skiffs, and which is almost if not wholly without current, is not a water course in that place, but a lake.⁴ The principal distinction between a pond or lake and a stream or water course is that in the former case the water is, in its natural state, substantially at rest. And this is so, independent of the size of the one or the other. So, a body of fresh water five or six miles long, a mile wide in some places, fed by springs, having no connection with any stream except by a slough which is dry in summer, and without any natural current, is a lake.⁵ But, as has been said, the presence of some current is not enough, alone, to change a lake into a stream,⁶ nor will the swelling of the stream into a broad sheet of water, in itself, make it a lake.⁷

¹ For the appropriation of water from lakes, see Sec. 650.

For riparian rights on lakes, see Sec. 474.

² See Chap. 16, Secs. 341-357.

For Great Lakes, see Sec. 295.

³ See water courses, Secs. 301-311.

⁴ *Ne-pee-nauk Club v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661.

⁵ *Trustees of Schools v. Schroll*, 120 Ill. 509, 12 N. E. Rep. 243, 60 Am.

Rep. 575; *Duckworth v. Watsonville etc. Co.*, 158 Cal. 206, 110 Pac. Rep. 927; *Id.*, 150 Cal. 520, 89 Pac. Rep. 338.

⁶ See Sec. 294.

See, also, *Macomber v. Godfrey*, 108 Mass. 219, 11 Am. Rep. 349; *Rigney v. Tacoma Light & Water Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425.

⁷ *Trustees v. Schroll*, *supra*.

§ 298. **Ponds—Definition and description.**—Ponds are of two kinds, natural and artificial. A natural pond has all of the physical characteristics of a small lake, and the terms “lake” and “pond” are frequently used interchangeably. A pond as defined by Webster is “a confined or stagnant body of fresh water,” and it is the body of the water which comprises the pond.¹ The word “pond” is indefinite. It may mean a natural pond or an artificial one raised for any purpose, either permanent or temporary.² The controlling distinction between a stream and a pond or lake is that in the former the water has a natural motion, or, in other words, a current, while in the latter the water is, in its natural state, substantially at rest.³ Hence, a body of water half a mile long and a quarter of a mile wide in the broadest part, fed by two streams, which has no current, and the bed of which is shaped like the bowl of a spoon, with a depth of sixteen feet in places, and a sluggish outlet four feet in depth, is a pond or lake, as distinguished from a stream or river.⁴ An artificial pond created by a milldam includes the dam.⁵ Hence a finding of the height of the water in a pond is equivalent to finding the height of the dam.⁶ In respect to title, the law divides natural fresh-water ponds into two classes: The small ponds pass by an ordinary grant of land, and the large are exempted from the operation of such a grant, for the reasons that private ownership stops at the water’s edge of the sea and its estuaries. Tide waters and large ponds are public waters.⁷

1 *Rockland Water Co. v. Camden*, 80 Me. 544, 15 Atl. Rep. 785, 1 L. R. A. 388.

Ulpian defines a pond as a temporary body of still water, which generally gathers in winter.—Ware, Roman Water Law, Sec. 59.

2 *Waterman v. Johnson*, 13 Pick. 261.

Callis speaks of a pond as if it were always artificial.—Callis on Sewers, 82. See, also, Woolrych on Sewers, 81.

For the appropriation of waters from ponds. See Sec. 560.

3 *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 800, 838, 16 Fed. Rep. 823; *Trustees of* 31—Vol. I—Kin. on Irr.

Schools v. Schroll, 120 Ill. 509, 12 N. E. Rep. 243, 60 Am. Rep. 575.

See, also, *Ne-pee-nauk Club v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661; *Foss v. Johnstone*, 158 Cal. 109, 110 Pac. Rep. 294.

4 *Gouverneur v. National Ice Co.*, 57 Hun. 474, 11 N. Y. Supp. 87; rev'd in *Id.* 134 N. Y. 355, 31 N. E. Rep. 865, 18 L. R. A. 695, 30 Am. St. Rep. 669.

5 *Jackson v. Vermilyea* (N. Y.), 6 Cow. 677.

6 *Hutchinson v. Chicago & N. W. R. Co.*, 37 Wis. 582; *Aken v. Parfrey*, 35 Wis. 249; *Smith v. Moodus Power Co.*, 35 Conn. 392.

7 *Concord Mfg. Co. v. Robertson*,

In a recent case in California it was held that, under Section 830 of the Civil Code, in the case of a nonnavigable pond, a grantee took to the middle of the pond, unless a different intent appears from the patents.⁸ As is the case of small lakes, this is the rule adopted in most jurisdictions, and also the rule adopted by the Supreme Court of the United States, where the State Courts uphold this right.⁹

In other States, however, the rule is different, and the grantee takes only to the edge of the pond.¹⁰ This is a question to be determined by each State as an incident to a grant by the Government. "Whatever incidents or rights attach to the ownership of property conveyed by the Government will be determined by the States."¹¹ This subject, however, will be more thoroughly discussed in another portion of this work.¹²

§ 299. **Ponds—Colonial "great ponds."**—In colonial times in Massachusetts and Maine the term "great ponds" was used to indicate those ponds of more than ten acres which were not before the year 1647 appropriated by private persons. Where they were not so appropriated, by colony ordinance, they were made to lie

66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679, and cases cited.

See, also, riparian rights in ponds as to boundaries and ownership, Sec. 474.

⁸ *Foss v. Johnstone*, 158 Cal. 119, 110 Pac. Rep. 294.

See, also, *Chapman v. Polack*, 70 Cal. 484, 11 Pac. Rep. 764; *Seaward v. Malotte*, 15 Cal. 304; *Vance v. Fore*, 24 Cal. 436; *Powers v. Jackson*, 50 Cal. 429.

⁹ *Heath v. Wallace*, 138 U. S. 573, 34 L. Ed. 1053, 11 Sup. Ct. Rep. 380; *Cragin v. Powell*, 128 U. S. 691, 32 L. Ed. 566, 9 Sup. Ct. Rep. 203; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210.

¹⁰ *Grant v. Hemphill*, 92 Iowa 218, 59 N. W. Rep. 263, 60 N. W. Rep. 618; *Carr v. Moore*, 119 Iowa, 152, 93 N. W. Rep. 52, 97 Am. St. Rep. 292; *Schlosser v. Hemphill*, 118 Iowa,

452, 90 N. W. Rep. 842; *Wright v. Council Bluffs*, 130 Iowa, 274, 104 N. W. Rep. 492, 114 Am. St. Rep. 412.

¹¹ *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 800, 838; *Mitchell v. Smale*, 140 U. S. 406, 35 L. Ed. 442, 11 Sup. Ct. Rep. 819; *Kean v. Calumet etc. Co.*, 190 U. S. 452, 47 L. Ed. 1134, 23 Sup. Ct. Rep. 651; *Hardin v. Shedd*, 190 U. S. 508, 47 L. Ed. 1156, 23 Sup. Ct. Rep. 685; *Heath v. Wallace*, 138 U. S. 573, 34 L. Ed. 1053, 11 Sup. Ct. Rep. 380; *Cragin v. Powell*, 128 U. S. 691, 32 L. Ed. 566, 9 Sup. Ct. Rep. 203; *St. Paul etc. R. Co. v. Schurmeir*, 74 U. S. 7 Wall. 272, 19 L. Ed. 74.

¹² For the ownership of the soil under fresh nonnavigable waters, see Secs. 328-332.

in common for the public use.¹ These ordinances seem to have been the foundation of a local common law in these two States which has led to a course of decisions with regard to the title of lakes and ponds at variance with the general common law, and which have been followed in some of the other States.²

When the Colony of Massachusetts, 250 years ago, reserved to public use her "great ponds" probably only fishing and fowling were in mind; but, with the growth of the community and its general progress these public reservations of certain waters, with reference to special uses only, became capable of many others, which are held to be within the design and intent of the original appropriation. The devotion to public use is sufficiently broad to include them all as they arise.³

§ 300. Pools—Definition and Description.—As a body of water a pool may be defined as a small body of standing water. By the Latin word, *stagnum*, a pool consists of both land and water, and therefore, in a conveyance of land upon which there is a pool, both the water and the land pass.¹ As a portion of a river or water course, it may be defined as a place in the channel where the water is temporarily partially at rest, as a fishing pool.²

¹ *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 800, 838; *Paine v. Woods*, 108 Mass. 160; *Commonwealth v. Vincent*, 108 Mass. 441; *Id. v. Weatherhead*, 100 Mass. 177; *Id. v. Alger*, 7 Cush. 53; *Id. v. Tiffany*, 119 Mass. 300; *West Roxbury v. Stoddard*, 7 Allen 158; *Hittinger v. Eames*, 121 Mass. 539; *Tudor v. Cambridge Water Works*, 1 Allen, 164; *Barrows v. McDermott*, 73 Me. 441; *Fay v. Salem Aqueduct Co.*, 111 Mass. 27; *Berry v. Raddin*, 11 Allen, 577; *Brastow v. Rockport Ice Co.*, 77 Me. 100; *Gage v. Steinkrauss*, 131 Mass. 222; *Rowell v. Doyle*, 131 Mass. 474; *Fernald v. Knox Woolen Co.*, 82 Me. 48, 19 Atl. Rep. 93, 7 L. R. A. 459; *Whitney v. Wheeler Cotton Mills*, 151 Mass. 396, 24 N. E. Rep. 774, 7 L. R. A. 613; *Attorney Gen. v. Revere Copper Co.*,

152 Mass. 444, 25 N. E. Rep. 605, 9 L. R. A. 510.

² *Hardin v. Jordan*, *supra*.

³ *Lamprey v. State and Metcalf*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *West Roxbury v. Stoddard*, 7 Allen, 158.

¹ *Johnson v. Rayner*, 6 Gray, 107; *Coke Litt.* 5; *Bullen v. Runnels*, 2 N. H. 255, 9 Am. Dec. 55; *Bacon, Abr. Grants*, H 3; *Comyns, Dig. Grant*, E 5.

Callis defines a pool as "a mere standing water, without any current at all." *Callis, Sewers*, p. 82.

² *Hart v. Hill (Pa.)*, 1 Whart. 124; *Bennett v. Boggs*, 3 Fed. Cas. 221; *Tinicum Fishing Co. v. Carter*, 61 Pa. (11 P. F. Smith) 21, 100 Am. Dec. 597.

§ 301. **Natural water courses**—**In general**—**Definition**.—There are many rights of riparian proprietors,¹ appropriators,² in and to natural water courses, and to the waters naturally flowing therein. Hence, in order to determine the nature and extent of the rights which may be acquired, it is necessary to know of what a water course consists. To maintain rights in a water course it must be made to appear that the water usually flows in a certain direction and by a regular, natural channel, with a bed, banks, or sides. They must be distinguished from artificial water courses as being formed entirely by Nature, while artificial water courses are formed by the works of man.³ In its legal sense, it consists of a bed, banks, sides, or walls, and a current of water. It is a

1 For Riparian Rights, see Secs. 450-551.

2 For the Arid Region Doctrine of Appropriation, see. Chap. 31, Secs. 585-594.

3 For Artificial Water Courses, see Sec. 316.

But the fact that a stream having all the characteristics of a water course is deepened artificially does not change its character. *Rigney v. Tacoma etc. Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425.

The term "natural water course" has a broader and more comprehensive meaning than the word "river." In its most general sense it means a course or channel in which water flows.

Worcester: 1. Any channel or passage for water. 2. A running stream of water; a natural stream, including rivers and rivulets.

Webster: 1. A stream of water; a river or brook. 2. A channel or canal for the conveyance of water, especially in draining lands. 3. A running stream of water having a bed and banks; the easement one may have in the flowing of such stream in its accustomed course.

Century Dict.: A water course, as

defined by law, means a living stream, with definite banks and channel, not necessarily running all the time, but fed from more permanent sources than mere surface water.

See, also, *Jeffers v. Jeffers*, 107 N. Y. 650, 14 N. E. Rep. 316, 1 Silvernail App. 546; *Joliet & C. R. Co. v. Healy*, 94 Ill. 416; 116 U. S. 119, 29 L. Ed. 607, 6 Sup. Ct. Rep. 352; *Chamberlain v. Hemingway*, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330; *Erwin v. Erie R. Co.*, 98 App. Div. 402, 90 N. Y. Supp. 315, 186 N. Y. 550; *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169.

A water course consists of bed, banks, and water; yet water need not flow continually; and there are many water courses which are sometimes dry.—*Angell on Water Courses*, 1877, Sec. 4, and notes.

Every river consists of (1) the bed, (2) the water, (3) the banks or shores; and it also has a current. It is a *water course* from the point where the water comes to the surface and begins to flow in a channel until it mingles with the sea, the arms of the sea, lakes, etc.—*Gould on Waters*, 1891, Sec. 41, and notes.

living stream confined to a channel, usually flowing in a particular direction, and usually discharging itself into some other stream or body of water, but not necessarily flowing all of the time, for there are water courses which are sometimes dry.⁴ It is a natural, living stream, and includes rivers, creeks, brooks, runs, and rivulets.⁵

There is a much more general definition of a water course, which has been adopted by some of the Courts, and which is: A water course is a condition created by a stream of water having a well-defined and substantial existence.⁶

⁴ That a water course may be sometimes dry and still not lose its identity, see Sec. 307.

For rivers, see Sec. 308.

For streams, see Sec. 309.

⁵ *Chamberlain v. Hemingway*, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330; *Porter v. Armstrong*, 129 N. C. 101, 39 S. E. Rep. 799; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Hill v. Cincinnati, W. & M. R. Co.*, 109 Ind. 511, 10 N. E. Rep. 410; *Weis v. City of Madison*, 75 Ind. 241, 39 Am. Rep. 135; *Tampa Water Works Co. v. Cline*, 37 Fla. 586, 20 So. Rep. 780, 33 L. R. A. 376, 53 Am. St. Rep. 262; *Simmons v. Winters*, 21 Ore. 35, 27 Pac. Rep. 7, 28 Am. St. Rep. 727; *Eulrich v. Richter*, 41 Wis. 318, 37 Wis. 226; *Barkley v. Wilcox*, 88 Iowa, 47, 55 N. W. Rep. 77; *Case v. Hoffman*, 84 Wis. 438, 54 N. W. Rep. 793, 20 L. R. A. 40, 36 Am. St. Rep. 937; *Id.* 100 Wis. 314, 72 N. W. Rep. 390, 74 N. W. Rep. 220, 75 N. W. Rep. 945, 44 L. R. A. 728; *Jeffers v. Jeffers*, 107 N. Y. 650, 14 N. E. Rep. 316; *Arthur v. Grand Trunk R. Co.*, 22 Ont. App. Rep. 89, aff'g *Beer v. Stroud*, 19 Ont. Rep. 10.

The unity of a water course is preserved throughout its entire course, and it begins where the water comes to the surface and continues to flow in a channel until it mingles with the

sea. *Lehigh Coal & Nav. Co. v. Pocomo Spring Water Ice Co.*, 7 Northampton Co. Rep. 350; *Luther v. Winnissimet Co.*, 9 Cush. 171; *Jones v. Wabash, St. L. & P. R. Co.*, 18 Mo. App. 251; *Wagner v. Long Island R. Co.*, 2 Hun, 633, 5 Thomp. & C. 163, 5 N. Y. Sup. Ct. 163, app. dismissed in 70 N. Y. 614; *Chicago, K. & N. R. Co. v. Steck*, 51 Kan. 737, 33 Pac. 601; *Kislinski v. Gilboy*, 19 Pa. Super. Ct. 453.

Mr. Justice Brewer, in *Gibbs v. Williams*, 25 Kan. 214, 37 Am. Rep. 241, said: "For a water course there must be a channel, a bed to the stream, not merely lowland or depression in the prairie over which the water flows. It matters not what the width or depth may be, a water course implies a distinct channel; a way cut and kept open by running water; a passage whose appearance, different from that of the adjacent land, discloses to every eye, on a mere casual glance, the bed of a constant or frequent stream; and such flow must be necessary to prevent the flooding of a considerable tract of land."

See, also, *Morrissey v. Chicago, B. & Q. R. Co.*, 38 Neb. 406, 56 N. W. Rep. 946; *Ventura Land & Pr. Co. v. Meiners*, 136 Cal. 284, 68 Pac. Rep. 818, 89 Am. St. Rep. 128.

⁶ *Schlieter v. Phillipy*, 67 Ind. 201; *Hill v. Cincinnati, W. & M. R. Co.*, 109

In the law text books and in the Court decisions there are to be found many definitions of the term "water course," but the definition that comes nearest to meeting our views is to be found in the opinion of a recent Idaho case, and is as follows: "A water course is a stream of water flowing in a definite channel, having a bed and sides or banks, and discharging itself into some other stream or body of water. The flow need not be constant, but must be more than mere surface drainage occasioned by extraordinary causes; there must be substantial indications of the existence of a stream which is ordinarily a moving body of water." 7

§ 302. **Water courses—General characteristics.**—There have been various attempts by the Courts and writers in the past to distinguish between water courses and rivers and streams, but the great weight of authority treats these terms as synonymous, and for the purposes of this work we will continue to so treat them. Those who desire to investigate the subject further, we

Ind. 511, 10 N. E. Rep. 410; Town v. Missouri P. R. Co., 50 Neb. 768, 70 N. W. Rep. 402; Weis v. Madison, 75 Ind. 241, 39 Am. Rep. 135; Eulrich v. Richter, 37 Wis. 226, 41 Wis. 318; Earl of Egremont v. Williams, 11 A. & E. N. S. 688, 63 Com. L. Rep. 687; Morrison v. Bucksport & B. R. Co., 67 Me. 353; Ashley v. Woolcott, 11 Cush. 192; Shelby County Comrs. v. Castetter, 7 Ind. App. 309, 33 N. E. Rep. 986; New York, C. & St. L. R. Co. v. Speelman, 12 Ind. App. 372, 40 N. E. Rep. 541; Rice v. City of Evansville, 108 Ind. 7, 9 N. E. Rep. 139, 58 Am. Rep. 53; Maxwell v. Shirts, 27 Ind. App. 529, 61 N. E. Rep. 754, 87 Am. St. Rep. 268; Hoyt v. City of Hudson, 27 Wis. 656, 9 Am. Rep. 473.

See, also, Hastie v. Jenkins, 53 Wash. 21, 101 Pac. Rep. 495; Brown v. Schneider, 81 Kan. 486, 106 Pac. Rep. 41, 135 Am. St. Rep. 396; Pyle v. Richards, 17 Neb. 180, 22 N. W. Rep. 370; Morrissey v. Chicago etc. Co., 38 Neb. 406, 56 N. W. Rep. 946;

Hinkle v. Avery, 88 Iowa 47, 55 N. W. Rep. 77, 45 Am. St. Rep. 224; West v. Taylor, 16 Ore. 165, 13 Pac. Rep. 665; Rigney v. Tacoma etc. Co., 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425; Geddis v. Parrish, 1 Wash. 587, 21 Pac. Rep. 314; City of Paola v. Garman, 80 Kan. 702, 103 Pac. Rep. 83; Hill v. Cincinnati etc. Co., 109 Ind. 511, 10 N. E. Rep. 410; Mace v. Mace, 40 Ore. 586, 67 Pac. Rep. 660, 68 Pac. Rep. 737; Quinn v. Chicago etc. R. Co., 23 S. D. 126, 120 N. W. Rep. 884; Larimore v. Miller, 78 Kan. 459, 96 Pac. Rep. 852; Shiveley v. Hume, 10 Ore. 76; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Town of Jefferson v. Hicks, 23 Okla. 684, 102 Pac. Rep. 79, 24 L. R. A., N. S. 214; Hough v. Porter, 51 Ore. 318, 98 Pac. Rep. 1083, 102 Pac. 728; Anderson etc. Co. v. McConnell (Nev.), 133 Fed. Rep. 581.

7 Hutchinson v. Watson Slough D. Co., 16 Idaho 484, 101 Pac. Rep. 1059, 133 Am. St. Rep. 125.

respectfully refer to our note.¹ As far as their physical characteristics are concerned, the only difference between rivers, streams, creeks, brooks, runs, and rivulets is their size and volume. They are all water courses, and come within our definition given above. A rivulet flowing from a spring of water, if it has a clear and well-defined channel, and a regular flow in that channel, is none the less a water course, although it is not equal in volume to a river.² In fact, the characteristics of a water course are easily

¹ Mr. Angell treats all running water (not tide waters) as water courses; although he says that they are commonly denominated as "rivers" or "rivulets" according to their magnitude. Angell on Water Courses, 1877, Secs. 3-4f, and notes.

See, also, authorities cited under the last section, No. 301.

See, also, Woolrych on Sewers, 51; *Id.* Law of Waters, 40; Callis on Sewers, 77; Locke, cited in Johns. Dict., 4th Ed., "River"; Hale's Treatise, De Jure Maris; Phear, Rights of Water, p. 31; Starr v. Child, 20 Wend. 149; Gavit v. Chambers, 3 Ohio 495; Rex v. Oxfordshire, 1 B. & Ad. 289, 20 Eng. C. L. 389, 109 Eng. Reprint 794; Howard v. Ingersoll, 17 Ala. N. S. 780, reversed, 54 U. S., 13 How. 381, 14 L. Ed. 189; Morgan v. Livingston, 6 Mart. (La.) 119; Shields v. Arndt, 4 N. J. Eq. (3 Green, Ch.) 234; Wagner v. Long Island R. Co., 5 N. Y. Sup. Ct. 163, 2 Hun, 633; Gillett v. Johnson, 30 Conn. 180; Macomber v. Godfrey, 108 Mass. 219, 11 Am. Rep. 349; Reynolds v. McArthur, 27 U. S., 2 Peters 417, 7 L. Ed. 470; Kauffman v. Griesemer, 26 Pa. St. 407, 67 Am. Dec. 437; Rex v. Trafford, 1 B. & Ad. 874, 20 Eng. C. L. 389, 8 Bing. 204, 21 Eng. C. L. 272, 109 Eng. Reprint 1011; Queen v. Derbyshire, 2 Q. B. 745, 114 Eng. Reprint 290; Rex v. Whitney, 3 Ad. & El. 69, 7 C. & P.

208; Abraham v. Great Northern R. Co., 16 Q. B. 586, 597, 71 Eng. C. L. 584, 20 L. J. Q. B. N. S. 322, 15 Jur. 855, 5 Eng. L. Eq. Rep. 258; Menzies v. Breadalbane, 3 Wilson & Shaw 234, 243.

In *Benson v. Connors*, 63 Iowa 670, 19 N. W. Rep. 812, where the Court, finding that there was a "water channel," a "natural channel" and the "natural flow of water therein" held conclusive that it was a natural stream and not a mere surface channel.

See, also, *McHardy v. Ellice*, 1 Can. App. 628, 39 Q. B. (Can.) 546, 37 *Id.* 580; *Palmer v. Waddell*, 22 Kan. 352; *Ashley v. Wolcott*, 11 Cush. 192; *Gibbs v. Williams*, 25 Kan. 214; *Serrin v. Greffe*, 67 Iowa 196, 25 N. W. Rep. 227; *Chicago R. R. Co. v. Morrow*, 42 Kan. 339, 22 Pac. Rep. 413.

² *Wheatley v. Baugh*, 25 Pa. (1 Casey) 528, 64 Am. Dec. 721, 13 *Morr. Min. Rep.* 374; *Child v. Starr*, 4 Hill (N. Y.) 369; *Jack v. Martin*, 12 Wend. (N. Y.) 311; *affd.* 14 Wend. 507; *Pyle v. Richards*, 17 Neb. 182, 22 N. W. Rep. 370; *Wolf v. Crothers*, 21 Pa. Co. Ct. 627.

To constitute a water course, the size of the stream is not important; it may be very small. *Luther v. Winnissimet Co.*, 9 Cush. 171; *Mitchell v. Bain*, 142 Ind. 604, 42 N. E. Rep. 230; *Town v. Missouri Pac. R. Co.*, 50 Neb. 768, 70 N. W. Rep. 402; *Mor-*

recognized, as are most physical objects, and if the question is left to be decided by a jury as a question of fact, there will be little difficulty in any case.³ But to constitute a water course there must be a supply which is permanent in the sense that similar conditions will always produce a flow of water in the same channel, and that the conditions recur with some degree of regularity, so that they establish and maintain for considerable periods of time a running stream.⁴ Hence a water course does not include surface water conveyed from higher to lower levels for limited periods, during the melting of snow, or during or soon after a heavy fall of rain, through hollows or ravines, which at all other portions of the seasons are entirely dry. These occasional bursts of water, which, in times of freshet, or of melting of ice or snow, descend from the hills and inundate the country, have none of the characteristics of a water course, according to our definition given above.

A water course, in the legal sense of the term, does not necessarily consist merely of the stream as it flows within the banks which form the channel in ordinary stages of high water. But, when in times of ordinary high water the stream, extending beyond its banks, is accustomed to flow down over the adjacent lowlands in a broader, but still well-defined stream, it has none the less the character of a water course and the law relating to water courses is applicable, rather than that relating to mere surface water.⁵ Whenever surface water flows in one continuous, well-marked channel it becomes a water course, if this flow becomes regular each season.⁶ So, if the waterflow continues only

rissey v. Chicago, B. & Q. R. Co., 38 Neb. 406, 56 N. W. Rep. 946; *McHardy v. Ellice*, 37 U. C. Q. B. 580, rev'd in 1 Ont. App. Rep. 628.

The existence of a water course may be settled by a decree of court. *Benson v. Connors*, 63 Iowa 670, 19 N. W. Rep. 812.

³ *Vernum v. Wheeler*, 35 Hun 55.

⁴ *Mann v. Retsof Min. Co.*, 49 App. Div. 454, 63 N. Y. Supp. 752.

⁵ *Town of Jefferson v. Hicks*, 23 Okla. 684, 102 Pac. Rep. 79, 24 L. R. A. N. S. 214.

⁶ *Borman v. Blackmon*, — Ore. —, 118 Pac. Rep. 848; *Angell on Water Courses*, Sec. 4 and note; *Gavit's Adm'rs v. Chambers*, 3 Ohio 496; *Weis v. Madison*, 75 Ind. 241, 39 Am. Rep. 135.

See *Hoyt v. Hudson*, 27 Wis. 656, 661, 9 Am. Rep. 472, in which Mr. Chief Justice Dixon of the Supreme Court in the opinion said: "The term 'water course' is well defined. There must be a stream usually flowing in a particular direction, though it need not flow continually. It may

long enough to dispose of the water which has fallen after a rain, or if the surface drained is so limited that the water can not assume the character of a stream, it is not a water course.⁷ But in some cases the Courts have not distinguished between water courses and drain-ways with that degree of particularity which is required by the great weight of authority, apparently holding that there could be no right of drainage unless there was a water course by means of which it could be effected.⁸ However, if a water course exists, its character is not changed by being con-

sometimes be dry. It must flow in a definite channel, having a bed, sides, or banks, and usually discharge itself into some other stream or body of water. It must be something more than a mere surface drainage over the entire face of a tract of land, occasioned by unusual freshets or other extraordinary causes. It does not include the water flowing in the hollows or ravines in the land, which is the mere surface water from rain or melting snow, and is discharged through them from a higher to a lower level, but which at other times are destitute of water. Such hollows or ravines are not in legal contemplation water courses." *Washburn on Easements*, 209, 210; *Shields v. Arndt*, 4 N. J. Eq. (3 Green's Ch.) 234; *Rice v. Evansville*, 6 West Rep. 244; *Luther v. Winnissimet Co.*, 9 Cush. 171; *Briscoe v. Drought*, 11 Ir. C. L. Rep. 250; *Howard v. Ingersoll*, 54 U. S. 13 How. 381, 14 L. Ed. 189; *Rev'g Id.*, 9 Ala. N. S. 780; *Ashley v. Wolcott*, 11 Cush. 192; *Flagg v. Worcester*, 13 Gray 601; *Parks v. Newburyport*, 10 Gray 28; *Reynolds v. McArthur*, 27 U. S. 2 Peters 417, 7 L. Ed. 470; *Dickinson v. Worcester*, 7 Allen 19; *Gannon v. Hargadon*, 10 Allen 106 (Mass.), 87 Am. Dec. 625; *Rawston v. Taylor*, 33 Eng. L. & Eq. 428, 25 L. J. Exch. N. S. 33, 11 Exch. 369, 4 Week. Rep. 290;

Broadbent v. Ramsbotham, 11 Exch. 602, 25 L. J. Exch. N. S. 115, 4 Week. Rep. 290, 34 Eng. L. & Eq. 553; *Bangor v. Lansil*, 51 Me. 521; *Earl v. DeHart*, 12 N. J. Eq. 280, 72 Am. Dec. 395.

⁷ *Morrison v. Bucksport & B. R. Co.*, 67 Me. 353; *Fryer v. Warne*, 29 Wis. 511. But see *Briscoe v. Drought*, 11 Ir. C. L. Rep. 250. See *Surface Water*, Sec. 318. See *Drainage*, Sec. 38.

A water course exists where "there was a quantity of water regularly passing, considerable except in droughts, in one, and only one, direction; not squandering and wandering over the surface as surface water does, but in a defined channel, over a bed between banks, through a channel cut by waters long 'ago.'" *Neal v. Ohio R. Co.*, 47 W. Va. 316, 34 S. E. Rep. 914.

⁸ *Sheehan v. Flynn*, 59 Minn. 436, 61 N. W. Rep. 462, 26 L. R. A. 632; *McClure v. Red Wing*, 28 Minn. 186, 9 N. W. Rep. 767, approved in *Taubert v. St. Paul*, 68 Minn. 519, 71 N. W. Rep. 664.

It has been held that a fixed course over which surface water from adjoining land is uniformly discharged at a definite point is a water course, within the rule prohibiting one from filling up a water course so as to impede the flow from the adjoining lands, though the course has no well-

fined in an artificial channel.⁹ A water course may lose its character, if water ceases to flow in it for the prescriptive period.¹⁰ A land owner, as far as his rights are concerned, may, by his conduct, estop himself from disputing the existence of a water course.¹¹ It is held that a water course need not necessarily empty into some other stream or other body of water, but that the water may sink into cavities or be lost by percolation.¹² In some of the States a water course has been defined by statute.¹³ It is only upon natural water courses that riparian rights may exist.¹⁴

§ 303. **Water courses—Essential characteristics of—The channel.**—According to the great weight of authority, the essential characteristics of a water course are: A channel, consisting of well-defined bed¹ and banks,² and a current of water.³ Many of the cases go to the extent that without all three of these characteristics there can be no water course.⁴

defined beds and banks. *Ribordy v. Murray*, 177 Ill. 134, 52 N. E. Rep. 325.

⁹ *Stanchfield v. Newton*, 142 Mass. 110, 7 N. E. Rep. 703; *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169; *Murphy v. Kelly*, 68 Me. 521; *Schafer v. Herb*, 7 Robt. 222.

¹⁰ *Ostrom v. Sills*, 28 Can. S. C. 485, affirming 24 Ont. App. Rep. 526.

¹¹ *Neal v. Ohio River R. Co.*, 17 W. Va. 316, 34 S. E. Rep. 914. But see *Paige v. Rocky Ford Canal & Irr. Co.*, 83 Cal. 84, 21 Pac. Rep. 1102, 23 Pac. Rep. 875.

¹² *Parke County v. Wagner*, 138 Ind. 609, 38 N. E. Rep. 171.

¹³ For the statutes of the respective States upon this subject, see Part 14.

¹⁴ *Chancellor Walworth*, in *Child v. Starr*, 4 Hill (N. Y.) 369; *Missouri Pac. R. Co. v. Wren*, 10 Kan. App. 408, 62 Pac. Rep. 7.

See, also, for riparian rights, Chaps. 21-28, Secs. 450-551.

For artificial water courses, see Sec. 316.

¹ For the bed, see Sec. 304.

² For the banks, see Sec. 305.

³ For the current, see Sec. 306.

Mr. Angell says that it consists of bed, banks, and water. Angell on Water Courses, 1877, Sec. 4.

See previous Secs. 301, 302.

⁴ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Beer v. Stroud*, 19 Ont. Rep. 10; *Ferris v. Wellborn*, 64 Miss. 29, 8 So. Rep. 165; *Livingston v. McDonald*, 21 Iowa 160, 89 Am. Dec. 563; *Hill v. Cincinnati, W. & M. R. Co.*, 109 Ind. 511, 10 N. E. Rep. 410; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. M. Rep. 673; *Schlieter v. Phillippy*, 67 Ind. 201; *Bangor v. Lansil*, 51 Me. 521; *Wagner v. Long Island R. Co.*, 2 Hun. (N. Y.) 633, 5 N. Y. Sup. Ct. 163; *Lessard v. Stram*, 62 Wis. 112, 22 N. W. Rep. 285, 51 Am. Rep. 715; *Hoyt v. City of Hudson*, 27 Wis. 656, 9 Am. Rep. 473; *Razo v. Varni*, 81 Cal. 289, 22 Pac. Rep. 848; *Carpenter v. Board of Commissioners*, 56 Minn. 513, 58 N. W. Rep. 295.

The channel is the deeper part of the water course, usually eroded out by the action of the water, and where the main current of the water flows. In other words, it is the passageway between the banks through which the water flows.⁵ The term "natural channel" includes not only all channels through which, in the existing conditions of the country, water naturally flows, but also new channels through which, by changes in the conformation of the country occurring by some local disturbance, the water is under natural laws discharged.⁶ The channel, in turn, is divided into its bed and banks.⁷ The rule is, that in order to have a water course there must be a channel; it has even been held that where there was a channel, there was a water course, although it carried no water except in times of heavy rains and of melting snows, thus forming what is termed a torrential stream.⁸ Upon the other hand, it is held that no water course exists if the channel is absent.⁹ And where the water flows merely over the low land, a bog, or a slough, it is not a water course.¹⁰ Neither does water oozing from a spring, through soft and spongy ground, consti-

⁵ *Benjamin v. Manistee River Imp. Co.*, 42 Mich. 628, 4 N. W. Rep. 483.

⁶ *Larrabee v. Cloverdale*, 131 Cal. 96, 63 Pac. Rep. 143.

See, also, *Los Angeles Cem. Assn. v. Los Angeles*, 103 Cal. 461, 37 Pac. Rep. 375; *Conniff v. San Francisco*, 67 Cal. 45, 7 Pac. Rep. 41.

⁷ For bed and banks, see Secs. 304, 305.

⁸ *York v. Davidson*, 39 Ore. 81, 65 Pac. Rep. 819.

See, also, *Conniff v. San Francisco*, 67 Cal. 45, 7 Pac. Rep. 41.

⁹ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Missouri Pac. R. Co. v. Wren*, 10 Kan. App. 408, 62 Pac. Rep. 7; *Palmer v. Waddell*, 22 Kan. 352; *Chicago, K. & W. R. Co. v. Morrow*, 42 Kan. 339, 22 Pac. Rep. 413; *Gibbs v. Williams*, 25 Kan. 214, 37 Am. St. Rep. 241; *McGillivray v. Millin*, 27 U. C. Q. B. 62; *Razzo v. Varni*, 81 Cal. 289, 22 Pac. Rep. 848; *Barnes v. Sab-*

ron, 10 Nev. 217, 4 Morr. Min. Rep. 673.

¹⁰ *Dickey v. Maddux*, 48 Wash. 411, 93 Pac. Rep. 1090; *Chicago, K. & W. R. Co. v. Morrow*, 42 Kan. 339, 22 Pac. Rep. 413; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. M. Rep. 673; *Union Pac. R. Co. v. Dyche*, 31 Kan. 120, 1 Pac. Rep. 243; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 678; *Geddis v. Parrish*, 1 Wash. St. 587, 21 Pac. Rep. 314; *Simmons v. Winters*, 21 Ore. 35, 27 Pac. Rep. 7, 28 Am. St. Rep. 727; *Ft. Morgan L. & C. Co. v. South Platte D. Co.*, 18 Colo. 1, 30 Pac. Rep. 1032, 36 Am. St. Rep. 259; *Town v. Missouri Pac. R. Co.*, 50 Neb. 768, 70 N. W. Rep. 402; *Platte Valley Irr. Co. v. Buckers Irr. M. & Imp. Co.*, 25 Colo. 77, 53 Pac. Rep. 334.

However, in the case of *Cederburg v. Dutra*, 3 Cal. 572, 86 Pac. Rep. 838, the Court held that where water flowed in a slough having well de-

tute a water course before it arrives at some definite channel.¹¹ If, however, the natural channel commences at the very source or springhead, where the water first manifests itself, no matter how small the flow, it is a water course.¹² A stream does not cease to be a water course and become mere surface water because at a certain point it spreads over a level meadow several rods in width and flows for a distance without banks before flowing in a definite channel.¹³ In every case the channel must be definite and permanent; at times the channel may be dry; at others it may not be able to hold all of the water that flows down from above, but in any case, when under certain conditions water does flow through the channel, the recurrence of those conditions must always produce a flow of water therein.

§ 304. **Water courses—Essential characteristics—The bed.**—The channel of a natural water course¹ is itself divided into the *alveus* or bed, and the *ripa* or banks or sides.² This is true whether the stream be salt or fresh, navigable or nonnavigable.³ The bed may be defined as that portion of a water channel of a water course which carries the water of the same at its ordinary stage. In other words, in high water the bed may be much more than submerged; in extremely low water, or where there is no water running at all, it may not be; but it is that portion of the channel which is more commonly covered with water and of which

finer banks, such slough constituted a water course though at some points the channel spread out and was quite shallow.

See, also, sloughs, Sec. 315.

¹¹ Dickey v. Maddux, 48 Wash. 411, 93 Pac. Rep. 1090; Geddis v. Parrish, 1 Wash. 587, 21 Pac. Rep. 314; Meyer v. Tacoma L. & P. Co., 8 Wash. 144, 35 Pac. Rep. 601; Southern Pac. R. Co. v. Durfour, 95 Cal. 615, 30 Pac. Rep. 783, 19 L. R. A. 92; Angell on Water Courses, 1877, Secs. 108b, 108p.

But see New York, C. & St. L. R. Co. v. Hamlet Hay Co., 149 Ind. 344, 47 N. E. Rep. 1060, 49 N. E. Rep. 269.

¹² Angell on Water Courses, 1877, Sec. 108q; Dudden v. Guardians of Clutton Union, 1 H. & N. 627, S. C. 26 L. J. Exch. N. S. 146, 38 Eng. L. & Eq. 526.

See, also, previous section, No. 302.

¹³ Harrington v. Demaris, 46 Ore. 111, 77 Pac. 603, 82 Pac. Rep. 14, 1 L. R. A., N. S. 756; Anderson etc. Co. v. McConnell (Nev.), 133 Fed. Rep. 581; Miller & Lux v. Madera C. & Irr. Co., 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S. 391.

¹ For the channel, see Sec. 303.

² For the banks, see Sec. 305.

³ For shore, see Sec. 293.

the soil is so occupied by the stream as to be wrested from vegetation which grows only upon the land. By a close examination of the bed and banks of a natural water course one may readily distinguish the exact line of demarcation between them.⁴ It can also be readily ascertained where the presence and action of water are so common and usual, and so long continued in ordinary years as to mark upon the soil of the bed a character distinct from that of the banks, not only in respect to the vegetation, but also in respect to the soil itself.⁵ In all cases the bed of a stream is a natural object, and is to be sought for not merely by the application of abstract rules, but as other natural objects are sought for and found, by the distinctive appearance they present.

The following is the somewhat imperfect definition of the bed of a water course: "The bed, which is a definite, and commonly a permanent, channel, is the characteristic which distinguishes the water of a river from mere surface drainage flowing without definite course or certain limits, and from water percolating through the strata of the earth, both of which are not subject to riparian rights, but form part of the realty, and belong exclusively to the owner of the realty."⁶ The "high-water mark" of a water course means what its language imports—a high-water mark or the highest level of the bed. It is co-ordinate with the limit of the bed of the water course, and that only is to be considered the bed which the water occupies sufficiently long and continuously to wrest it from vegetation and destroy its value for agricultural purposes. It does not include low lands which, although subject to frequent overflow, are valuable as meadows and pasture.⁷

⁴ See *Houghton v. Chicago etc. R. Co.*, 47 Iowa 370; *Alabama v. Georgia*, 64 U. S. 23 How. 505, 16 L. Ed. 556; *Pulley v. Municipality No. 2*, 18 La. 278; *Haight v. City of Keokuk*, 4 Iowa 199; *Harlan & Hollingsworth Co. v. Paschall*, 5 Del. Ch. 435; *Dayton v. Cooper Hydraulic Co.*, 10 Ohio S. & C. P. Dec. 192.

⁵ *Howard v. Ingersoll*, 54 U. S. 13 How. 381, 14 L. Ed. 189; *Rev'g 17 Ala. N. S. 780*.

⁶ *Paine Lumber Co. v. U. S.*, 55 Fed. 854; *Eulrich v. Richter*, 37 Wis. 226, 41 Wis. 318; *Carpenter v. Board of*

Commissioners, 56 Minn. 513, 58 N. W. Rep. 295.

Under the statutes of Virginia the bed of a river includes the shores and the whole space through which the stream flows. *Town of Ravenswood v. Fleming*, 22 W. Va. 52, 46 Am. Rep. 485.

Where a distinct channel is not worn in the soil it is not the bed of a river. *Gibbs v. Williams*, 25 Kan. 214, 37 Am. Rep. 241.

⁷ *Carpenter v. Board of Commissioners*, 56 Minn. 513, 58 N. W. Rep. 295.

§ 305. Water courses—Essential characteristics—The banks.—

As we have seen, the channel of a water course must also have its banks; the word shores, *littora*, is often improperly used when referring to the banks of rivers and water courses, and especially to fresh water rivers. In referring to that portion of a river where the tide ebbs and flows, the word "shore" is allowable, but not otherwise. A river in which the tide does not ebb and flow has no shores in a legal sense.¹ The word "shore" is strictly applicable only to the space between ordinary high and low water mark on a tidal river, the sea, or a lake; but it is sometimes loosely used with reference to fresh water rivers, either as synonymous with the bank, or as denoting that portion of the bank which touches the margin of the stream at low water.²

The banks of a water course are the elevations of land which confine the waters to their natural channel when they rise to the highest point at which they are confined to a definite course and channel.³ According to the civil law definition as given by Ulpian, the banks of a water course, or river, are those banks which contain the river in the rigor of its normal course. If, owing to rains, or the sea, or some other cause, the river has expanded, the banks are unchanged.⁴ However, it is not essential to a water course that the banks shall remain unchangeable, or that there shall be everywhere a visible change in the angle of ascent marking the line between the bed and the banks. The banks, also, as was said of the bed of a water course,⁵ are natural objects, subject to an endless variety of change, and the law can not fix the limits of the variations of these or other natural objects.⁶

¹ See Worcester's Dict., Sub. Shore; Chamberlain v. Hemingway, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330.

See, also, for shores, Sec. 293.

² Handley v. Anthony, 18 U. S. 5 Wheat. 374, 5 L. Ed. 113; Dutton v. Strong, 66 U. S. 1 Black. 23, 17 L. Ed. 29; Stone v. Augusta, 46 Me. 127; McCulloch v. Wainright, 14 Pa. St. 171; Lacy v. Green, 84 Pa. St. 514; Child v. Starr, 4 Hill 369; Starr v. Child, 20 Wend. 149.

³ Howard v. Ingersoll, 54 U. S. 13 How. 381, 14 L. Ed. 189; rev'g 17 Ala. N. S. 780; Highway Commrs. v. Madison County, 125 Ill. 9, 17 N. E. Rep. 147; Starr v. Child, 20 Wend. 149; State v. Gilmanton, 9 N. H. 461, 14 N. H. 467; McCullough v. Wainright, 14 Pa. St. 171.

⁴ Ware, Roman Water Law, Sec. 21.

⁵ See Sec. 304.

⁶ Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Bassett v. Salisbury Mfg. Co., 43 N. H. 569,

§ 306. **Water Courses—Essential characteristics—The current or flow.**—According to the almost unanimous weight of authority, one of the necessary essentials of a water course, is not only water from a definite source of supply, but it must be running water. The water must have a current.¹ There must be a definite source of water supply, which is permanent in the sense that similar conditions will always produce a flow of water, and that these conditions recur with some degree of regularity, so that they establish and maintain for considerable periods of time a running stream.² As we have seen in a previous section,³ in order to constitute a water course, there must be something more than a mere surface drainage over the entire face of a tract of land, occasioned by unusual freshets or other extraordinary causes.⁴ This is true in its

82 Am. Dec. 179; *Howard v. Ingersoll*, 54 U. S. 13 How. 381, 14 L. Ed. 189; *rev'g* 17 Ala. N. S. 780.

¹ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Morrison v. Officer*, 48 Ore. 569, 87 Pac. Rep. 896; *Spangler v. San Francisco*, 84 Cal. 12, 23 Pac. Rep. 1091, 18 Am. St. Rep. 158; *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169; *West v. Taylor*, 16 Ore. 165, 13 Pac. Rep. 665.

² *Mann v. Retsof Min. Co.*, 49 App. Div. 454, 63 N. Y. Supp. 752; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Barkley v. Wilcox*, 86 N. Y. 140, 19 Hun 320, 40 Am. Rep. 519; *Jeffers v. Jeffers*, 107 N. Y. 650, 14 N. E. Rep. 316; *Gregory v. Bush*, 64 Mich. 37, 8 Am. St. Rep. 797, 31 N. W. Rep. 90.

In *Shields v. Arndt*, 4 N. J. Eq. (3 Green Ch.) 234, it is said: "There must be water as well as land, and it must be a stream usually flowing in a particular direction. It need not flow continually, as many streams in this country are, at times, dry."

"When water has a definite source,

as a spring, and takes a definite channel, it is a water course." *Pyle v. Richards*, 17 Neb. 181, 22 N. W. Rep. 370.

See, also, *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Hoyt v. Hudson*, 27 Wis. 656, 9 Am. Rep. 473; *Lassard v. Stram*, 62 Wis. 112, 22 N. W. Rep. 284, 51 Am. Rep. 715; *Town v. Missouri Pac. R. Co.*, 50 Neb. 768, 70 N. W. Rep. 402; *Eulrich v. Richter*, 37 Wis. 228, 41 Wis. 318.

³ See Sec. 301.

⁴ See surface water, Sec. 318; *Hoyt v. City of Hudson*, 27 Wis. 656, 9 Am. Rep. 473; *Case v. Hoffman*, 100 Wis. 314, 72 N. W. Rep. 390, 44 L. R. A. 728, 84 Wis. 438, 54 N. W. Rep. 793, 20 L. R. A. 40, 36 Am. St. Rep. 937; *Blohowak v. Grochoski*, 119 Wis. 189, 96 N. W. Rep. 551; *Morrison v. Bucksport & B. R. Co.*, 67 Me. 353; *Los Angeles Cem. Assn. v. Los Angeles*, 103 Cal. 461, 37 Pac. Rep. 375; *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169; *Luther v. Winnissimet Co.*, 9 Cush. 171; *Vernum v. Wheeler*, 35 Hun. (N. Y.) 55; *Lawton v. South Bound R. Co.*, 61 S. C. 548, 39 S. E. Rep. 752; *Benson v. Chicago & A. R. Co.*, 78 Mo. 504;

strict sense, but surface water may collect from so large a drainage area and be so continuous in its flow as to form the definite source of supply for a water course below.⁵ Again, the regular and definite source of supply of the water for a water course may be springs, especially where the flow is strong enough to assume the character of a stream.⁶ This is not so if the water from the spring

St. Louis, I. M. & S. R. Co. v. Schneider, 30 Mo. App. 620; Town v. Missouri Pac. R. Co., 50 Neb. 768, 70 N. W. Rep. 402; Morrissey v. Chicago, B. & Q. R. Co., 38 Neb. 406, 56 N. W. Rep. 946; Hill v. Cincinnati, W. & M. R. Co., 109 Ind. 511, 10 N. E. Rep. 410; Pyle v. Richards, 17 Neb. 180, 22 N. W. Rep. 370; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; City of Paola v. Garman, 80 Kan. 702, 103 Pac. Rep. 83; Schlieter v. Phillipy, 67 Ind. 201; Bangor v. Lansil, 51 Me. 521; Wagner v. Long Island R. Co., 2 Hun (N. Y.) 633, 5 N. Y. Sup. Ct. 163; Lessard v. Stram, 62 Wis. 112, 22 N. W. Rep. 284, 51 Am. Rep. 715; New York etc. Co. v. Speelman, 12 Ind. App. 372, 40 N. E. Rep. 541; Shively v. Hume, 10 Ore. 76; Sierra County v. Nevada County, 155 Cal. 1, 99 Pac. Rep. 371; Huffner v. Sawday, 153 Cal. 86, 94 Pac. Rep. 424; Verdugo etc. Co. v. Verdugo, 152 Cal. 655, 93 Pac. Rep. 1021.

⁵ Arthur v. Grand Trunk R. Co., 22 Ont. App. 89; McKinley v. Union County, 29 N. J. Eq. 164; Beer v. Stroud, 19 Ont. Rep. 10; Kelly v. Dunning, 39 N. J. Eq. 482; Eulrich v. Richter, 41 Wis. 318, 37 Wis. 226; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Palmer v. Waddell, 22 Kan. 352; Hill v. Cincinnati, W. & M. R. Co., 109 Ind. 511, 10 N. E. Rep. 410; Briscoe v. Drought, 11 Ir. C. L. Rep. 250.

As was said in the case of Simmons v. Winters, 21 Ore. 35, 27 Pac. Rep.

7, 28 Am. St. Rep. 727, "The term 'water course' does not include water descending from the hills, down the hollows and ravines, without any definite channel, only in times of rain and melting snow, but where water, owing to the hilly or mountainous configuration of the country, accumulates in large quantities from rain and melting snow, and at regular seasons descends through the long deep gullies or ravines upon the lands below, and in its onward flow carves out a distinct and well-defined channel, which even to the casual glance bears the unmistakable impress of the frequent action of running water, and through which it has flowed from time immemorial, such a stream is to be considered a water course, and to be governed by the same rules."

See, also, Earl v. De Hart, 12 N. J. Eq. 280, 72 Am. Dec. 395; McClure v. City of Red Wing, 28 Minn. 186, 9 N. W. Rep. 767; Gibbs v. Williams, 25 Kan. 214, 37 Am. Rep. 241; West v. Taylor, 16 Ore. 165, 13 Pac. Rep. 665.

⁶ Pyle v. Richards, 17 Neb. 182, 22 N. W. Rep. 370; Jack v. Martin, 12 Wend. (N. Y.) 311, 14 Wend. 507; Mitchell v. Bain, 142 Ind. 604, 42 N. E. Rep. 230; Wolf v. Crothers, 21 Pa. Co. Ct. Rep. 627; Brosnan v. Harris, 39 Ore. 148, 65 Pac. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; Wheatley v. Baugh, 25 Pa. (1 Casey) 528, 64 Am. Dec. 721, 13 Morr. Min. Rep. 374; Wilkins v. McCue, 46 Cal. 656; Shendoah etc. Co. v. Morgan, 106 Cal.

flows only in times of rain, which occur at irregular periods, and the flow continues only long enough to dispose of the water which has fallen.⁷

And, again, the source of supply may be the channel which affords an outlet to the water of a pond or lake, even where the pond itself is formed by surface water.⁸ The water of a water course must have a current; in other words, it must be running water. The flow of the water must be usually in one direction and by a regular channel having both a source and mouth.⁹ If the water spreads out so that the current becomes imperceptible or is lost, the water becomes a lake or pond, and is no longer a water course.¹⁰ Indeed, the controlling distinction between a water course and a pond or a lake is, that in the former case the water has a natural motion, or a current, while in the latter the water is, in its natural state, substantially at rest. And this is so, independent of the size of the one or the other.¹¹ If the current continues, the mere fact that a stream spreads out does not change its character as a water course.¹² So, also, the exit of a lake, with a sensible cur-

409, 39 Pac. Rep. 802; *County of Sierra v. County of Nevada*, 155 Cal. 1, 99 Pac. Rep. 371.

⁷ *Morrison v. Bucksport & B. R. Co.*, 67 Me. 353; *Fryer v. Warne*, 29 Wis. 511.

⁸ *Neal v. Ohio River Co.*, 47 W. Va. 316, 34 S. E. Rep. 914; *Hastie v. Jenkins*, 53 Wash. 21, 101 Pac. Rep. 495, where it is said: "As we have seen, the testimony in this case shows that this was a water course and an outlet of this lake. It does not matter whether it be called a swag or a swamp or a creek, or whether its course be straight or crooked. The channel in this case was shown to have well-defined banks, and it is shown that the creek was the natural outlet for the water of the lakes, and that the waters flowing through said channel all reached a common place."

⁹ *Chamberlain v. Hemingway*, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330.

¹⁰ See *Lakes*, Secs. 295-297. See *Ponds*, Secs. 298, 299; *Trustees of Schools v. Schroll*, 120 Ill. 509, 12 N. E. Rep. 243, 60 Am. Rep. 575.

¹¹ See, also, *Ne-pee-nauk v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661.

¹² *Macomber v. Godfrey*, 108 Mass. 219, 11 Am. Rep. 349; *Rigney v. Tacoma Light & Water Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425; *Case v. Hoffman*, 84 Wis. 438, 54 N. W. Rep. 793, 20 L. R. A. 40, 36 Am. St. Rep. 937; *Id.*, 100 Wis. 314, 72 N. W. Rep. 390, 74 N. W. Rep. 220, 75 N. W. Rep. 945, 44 L. R. A. 728; *Mansfield v. Ross*, 4 New Zealand, L. R. S. Ct. 290. See *Lakes*, Secs. 294-297; *Mitchell v. Bain*, 142 Ind. 604, 42 N. E. Rep. 230. See *Ponds*, Secs. 298, 299; *Byrne v. Minneapolis & St. L. R. Co.*, 38 Minn. 212, 36 N. W. Rep. 339, 8 Am. St. Rep. 668; *Gillett v. Johnson*, 30 Conn. 180; *Shield v. Arndt*, 4 N. J. Eq. (3 Green Ch.) 234; *West v. Taylor*, 16 Ore. 165, 13 Pac.

rent toward a gravel-bed, where the water sinks and finds its way by rapid percolation through the gravel, is a water course. Nor does the fact that for a portion of its course the water flows underground destroy its character as a water course.¹³ Upon the other hand, a hollow or ravine without a permanent flow of water is not a water course, although, at times, from rains or melting snow, water may flow therein.¹⁴ Neither is a swale nor swamp nor bog, although there may be a permanent supply of water, unless there is a perceptible current and flow of the water in a certain direction.¹⁵ Again, for the reason that there is no permanent flow or source of permanent water supply, depressions in prairies due to the rolling character of the ground are not water courses.¹⁶

§ 307. **Water courses—At times may be dry.**—We have stated before that a water course does not include surface water conveyed from a higher to a lower level, for limited periods, through no definite channel, during periods of extraordinarily high water;¹ neither is it an essential characteristic of a water course that the

Rep. 665; *Blohowak v. Grochoski*, 119 Wis. 189, 96 N. W. Rep. 551; *Anderson etc. Co. v. McConnell*, Nev., 133 Fed. Rep. 581; *Miller & Lux v. Madera etc. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S. 391.

¹³ *Hebron Gravel Road Co. v. Harvey*, 90 Ind. 192, 46 Am. Rep. 199. See *Subterranean Waters*, Sec. 323; *Washington County Water Co. v. Garver*, 91 Md. 398, 46 Atl. Rep. 979; *Strait v. Brown*, 16 Nev. 317, 40 Am. Rep. 497; *Case v. Hoffman*, 84 Wis. 438, 54 N. W. Rep. 793, 20 L. R. A. 40, 36 Am. St. Rep. 937; *Id.* 100 Wis. 314, 72 N. W. Rep. 390, 74 N. W. Rep. 220, 75 N. W. Rep. 945, 44 L. R. A. 728; *Platte Valley Irr. Co. v. Buckers Irr. & M. Co.*, 25 Colo. 77, 53 Pac. Rep. 334.

¹⁴ *Los Angeles etc. Assn. v. Los Angeles*, 103 Cal. 461, 37 Pac. Rep. 375; *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169.

For ravines as water courses, see Sec. 312.

¹⁵ *Sanquinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169; *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 738; *Dickey v. Maddux*, 48 Wash. 411, 93 Pac. Rep. 1090; *Parizek v. Hinek*, 144 Iowa 563, 123 N. W. Rep. 180; *Hayward v. Mason*, 54 Wash. 649, 104 Pac. Rep. 139.

For swales and swamps, see Secs. 314, 317.

¹⁶ *Gibbs v. Williams*, 25 Kan. 214, 37 Am. Rep. 241; *Rice v. City of Evansville*, 108 Ind. 7, 9 N. E. Rep. 139, 58 Am. Rep. 53; *Eulrich v. Richter*, 37 Wis. 226, 41 Wis. 318; *Rait v. Furrow*, 74 Kan. 101, 85 Pac. Rep. 934, 6 L. R. A., N. S. 157. But see *Quinn v. Chicago etc. R. Co.*, 23 S. D. 126, 120 N. W. 884.

¹ See Secs. 301, 302.

See, also, *Surface Water*, Sec. 318.

flow of the stream must be continuous. In other words, no extraordinarily large or minimum amount of water is required. But at times a water course may be entirely dry; however, it must have a well defined and substantial existence. Those who are acquainted with the streams and water courses of the arid Rocky Mountain region of this country, draining as they do steep, mountainous areas with their swift currents, running over gravelly and rocky bottoms, know that often in the dry summer months many of them are entirely dry, at least upon the surface. All of them, nevertheless, have well defined beds, channels, banks, and currents of water, at least the greater portion of the year, and are in every respect water courses to which water rights may attach. But it would be plainly impracticable in this western part of the country to require that, in order to constitute a water course upon which rights may attach, there must be a continuous, uninterrupted, and perennial flow of water during the entire year, and from year to year. Hence the requirement of the law is that in order to constitute a water course the stream need not flow all of the time.²

² The stream need not flow continuously in order to constitute a water course. *Spink v. Corning*, 61 App. Div. 84, 70 N. Y. Supp. 143; *Rex v. Oxfordshire*, 1 Barn. & Ad. 289, 8 L. J. K. B. 354, 20 Eng. C. L. 389, 109 Eng. Reprint 794; *Spangler v. San Francisco*, 84 Cal. 12, 23 Pac. Rep. 1091, 18 Am. St. Rep. 158; *Mace v. Mace*, 40 Ore. 586, 67 Pac. Rep. 660, 68 Pac. Rep. 737; *Shields v. Arndt*, 4 N. J. Eq. (3 Green Ch.) 234; *West v. Taylor*, 16 Ore. 165, 13 Pac. Rep. 665; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Pyle v. Richards*, 17 Neb. 180, 22 N. W. Rep. 370; *Morrissey v. Chicago, B. & Q. R. Co.*, 38 Neb. 406, 56 N. W. Rep. 946, 57 N. W. Rep. 522; *Rose v. St. Charles*, 49 Mo. 509; *Shively v. Hume*, 10 Ore. 76; *Reynolds v. McArthur*, 27 U. S. 2 Pet. 417, 7 L. Ed. 470.

In *Simmonds v. Winters*, 21 Ore. 35,

27 Pac. Rep. 7, 28 Am. St. Rep. 727, the Court held, that a water course is a stream of water usually flowing in a particular direction, with well defined channel and banks, but the water need not flow continuously, as the channel may sometimes be dry; but this does not include the water descending from the hills without any definite channel, only in times of melting snow and ice. But the Court also held, where water owing to the hilly or mountainous configuration of the country accumulates in large quantities from rains and melting snows, and at regular seasons descends through gullies or ravines upon the lands below and in its onward flow cuts out through the soil a well defined channel which bears the unmistakable impress of the frequent action of running water, and through which it has flowed from time immemorial during such seasons, such a stream is to be considered a water

The question as to what constitutes a water course is of great importance, and the subject has been discussed by many Courts of last resort, not only of the States and Territories of the arid region, but also of the Eastern States. In *Barnes v. Sabron*, which is a leading case upon the subject, Mr. Chief Justice Hawley, in rendering the opinion of the Court, said: "It appears from the testimony that Current Creek is partly supplied, at certain seasons of the year, from springs having their rise and flow along its banks and bed, but mostly from melting snow on the mountain. There is no regularity as to the quantity of water, for, to quote the language of several of the witnesses, 'no two seasons are alike,' the amount of water flowing being dependent upon the character of weather during the preceding winter. After a cold winter, when deep snows have fallen, the water flows in greater quantity and for a longer time than after an open winter, with but little snow; hence, the amount of water varies in the summer season—according to different statements made by different witnesses—from nothing to five thousand inches. There is conflict of evidence as to the real character of this stream; the conflict, however, is principally confined to the question, whether the water therein 'continuously flows.' The fact that should have been found by the Court below was whether or not Current Creek was a natural water course or a surface stream. To ascertain that fact it was not necessary to determine whether the water was continuously flowing. 'A water course,' says Angell, 'consists of bed, banks, and water; yet the water need not flow continually, and there are many water courses which are sometimes dry. There is, however, a distinction to be taken in law between a regularly flowing stream of water, which at certain seasons is dried up, and those occasional bursts of water which in times of freshets or in times of melting of ice or snow, descend from the hills and inundate the country. . . . The finding 'that the same is supplied at certain seasons of the year from the snows on the mountains above the valley, and from the springs having their rise and flow along

course, and governed by the same rules.

See, also, *Huffner v. Sawday*, 153 Cal. 86, 94 Pac. Rep. 424; *Los Angeles Cem. Assn. v. Los Angeles*, 103

Cal. 461, 37 Pac. Rep. 375; *Sierra County v. Nevada County*, 155 Cal. 1, 99 Pac. Rep. 371.

See, also, *Subterranean Waters*, Sec. 323; Chaps. 59-62, Secs. 1148-1211.

the banks and bed of the same' (being sustained by the evidence) gives to this creek the character of a natural water course, in so far as finding one is involved. It is well settled that in order 'to maintain the right to a water course or brook it must be made to appear that the water usually flows in a certain direction, and by a regular channel with banks or sides. It need not be shown to flow continually, . . . and it may be dry; but it must have a well defined and substantial existence.' ''³

In an action to prevent the diversions of the water from a stream used by the plaintiff for irrigation purposes, it is no defense that the stream is dry during the summer months.⁴

§ 308. **Rivers as water courses.**—The word "river" has a more narrow and less comprehensive meaning than the term "water course." In the common acceptance of the word, "river" means the larger streams of flowing water, while the term "water course" includes all streams regardless of their size, however great or however small. Hence it follows that all rivers are natural water courses, but all water courses could not be termed rivers. A river must have all of the essential characteristics of a water course; these have been discussed in our previous sections.¹ It

³ Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673.

See, also, Angell on Water Courses, Sec. 4; Shively v. Hume, 10 Ore. 76; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Gibbs v. Williams, 25 Kan. 214, 37 Am. Rep. 241; Palmer v. Waddell, 22 Kan. 352; Geddis v. Parrish, 1 Wash. 587, 21 Pac. Rep. 314; Hanson v. McQue, 42 Cal. 303, 10 Am. Rep. 299; Dickinson v. Worcester, 7 Allen 19; Shields v. Arndt, 4 N. J. Eq. (3 Green Ch.) 234; Gillett v. Johnson, 30 Conn. 180; Luther v. Winnissimet Co., 9 Cush. 171; McUmb v. Godfrey, 108 Mass. 219; Ashley v. Wolcott, 11 Cush. 192; Gannon v. Hargadon, 19 Allen 106, 87 Am. Dec. 625; Swett v. Cutts, 50 N. H. 439, 9 Am. Rep. 276; Buffum v. Harris, 5 R. I. 243; Earl v. DeHart,

12 N. J. Eq. 280, 72 Am. Dec. 395; Parks v. Newburyport, 10 Gray 28; Flagg v. Worcester, 13 Gray 601; Eulrich v. Richter, 41 Wis. 318, 37 Wis. 226; Hoyt v. City of Hudson, 27 Wis. 656, 9 Am. Rep. 473; Kelly v. Dunning, 39 N. J. Eq. 482; Pyle v. Richards, 17 Neb. 180, 22 N. W. Rep. 370; Jones v. Wabash etc. R. Co., 18 Mo. App. 251.

⁴ Huffner v. Sawday, 153 Cal. 86, 94 Pac. Rep. 424.

See, also, Larimore v. Miller, 78 Kan. 459, 96 Pac. Rep. 852; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

¹ See Secs. 303-306.

Mr. Justice Wayne in delivering the opinion of the Supreme Court of the United States, in the case of Howard v. Ingersoll, 54 U. S. 13 How. 381, 14

must have a bed, banks, and a stream of running water from its source to its mouth, and, in addition thereto, be of a considerable size.² There seems to be no complete definition of the word "river" in any Court decision. But the definitions given in the opinions were evidently given with reference to some particular point to be decided in the cases and do not give a general legal definition of the word. The word "river" may be defined in its legal sense as a considerable stream of water that has a current of its own, pent in on each side by walls or banks, and flowing from its source at a higher level, to its mouth below, where it empties into the sea, a lake, or other water.³ It is a river from

L. Ed. 189, 17 Ala. N. S. 780, upon the question of the meaning of the word "river," said: "When the commissioners used the words 'bank' and 'river,' they did so in the popular sense of both. When the banks of rivers were spoken of those boundaries were meant which contained their waters at their highest flow, and in this condition they make what is called the bed of the river. They knew that rivers have banks, shores, water, and a bed; and that the outer line on the bed of a river, on either side of it, may be distinguished upon every stage of its water, high or low, at its highest or lowest period. It neither takes in overflowed land beyond the bank, nor includes swamps nor low grounds liable to be overflowed, but reclaimable for meadows or agriculture or which being too low for reclamation, though not always covered with water, may be used for cattle to range upon as natural or uninclosed pasture. But it may include spots lower than the bluff or bank, whether there is or is not a growth upon them, not forming a part of the lands, whether low or high, we know to be upland or fast lowland, if such spots are within the bed of the river. Such a line may be found upon

the bed of every river, from its source to its mouth. It requires no scientific exploration to find or mark it out. The eye traces it in going either up or down a river in any stage of water. With such an understanding of what a river is as a whole, from its parts, there is no difficulty in fixing the boundary line in question."

2 See Water Courses, Secs. 301-307.

3 The word "river" is derived from the Latin "*rivus*." "*Rivus est locus per longitudinem depressus quo aqua decurrit*." Ulpian's Dig. "*De Rivis*."

The word "river" is used constantly by the Latin authors in a sense that implies a current from a source to a mouth. "*Rivorum a fonte deductio*." Cicero. "*Omnia flumina atque rivos qui ad mare pertinebant*." Caesar.

Ulpian, the Roman jurist, makes the following unique distinction between a river and a brook: "A river is distinguished from a brook, either by its size or by the opinions of those living along it." See Ware, Roman Water Law, Sec. 17.

Webster: River. A large stream of water flowing in a channel on land toward the ocean, a lake, or another

the point where the water comes to the surface and begins to flow in a channel, until it mingles with the sea or other water. It may sometimes be dry.⁴

In the case of *Reynolds v. McArthur*, Mr. Chief Justice Marshall in rendering the opinion of the Court upon the proposition advanced by some that the *source of a river* must be considered as commencing at that point in its channel from which water flows at all seasons of the year, in opposition thereto, said: "Is this proposition so invariably true as to become a principle of law? We think it is not. A stream may acquire the name of a river, in the channel of which at some season of extreme drought no

river; a stream larger than a rivulet or brook.

Worcester: A large inland stream of water flowing into the sea, a lake, or another river; a stream larger than a brook.

Cent. Dict.: A considerable body of water flowing with a perceptible current in a certain course or channel, usually without cessation during the entire year.

Imp. Dict.: A large stream of water flowing through a certain portion of the earth's surface, and discharging itself into the sea, a lake, a marsh, or another river.

A river is defined to be a body of water of no specific dimensions, larger than a brook or rivulet, a running stream pent in on each side by walls or banks. *Howard v. Ingersoll*, 54 U. S. 13 How. 381, 14 L. Ed. 189, 17 Ala. N. S. 780; *Alabama v. Georgia*, 64 U. S. 23 How. 505, 16 L. Ed. 556; *Shelby Co. Comrs. v. Castetter*, 7 Ind. App. 309, 33 N. E. Rep. 986, 34 N. E. Rep. 687.

For other definitions, see *People v. Gold Run D. & Min. Co.*, 66 Cal. 138, 4 Pac. Rep. 1152, 56 Am. Rep. 80; *Gavit's Adm'rs v. Chambers*, 3 Ohio 495; *Starr v. Child*, 20 Wend. (N. Y.) 149; *Harland & Hollingsworth Co. v.*

Paschall, 5 Del. Ch. 435; *State v. Gilmanton*, 14 N. H. 467, 9 N. H. 461; *The Garden City*, 26 Fed. Rep. 766; *Berlin Mills Co. v. Wentworth's Location*, 60 N. H. 156; *Dudden v. Guardians of Clutton Union*, 1 Hurl. & N. 627, S. C. 26 L. J. Exch. N. S. 146, 38 Eng. L. & Eq. 526; *Gallup v. Tracy*, 25 Conn. 10; *Stanchfield v. City of Newton*, 142 Mass. 110, 7 N. E. Rep. 703; *Chamberlain v. Hemingway*, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330; *Jeffers v. Jeffers*, 107 N. Y. 650, 14 N. E. Rep. 316, 1 Silvernail Ct. App. 546; *Joliet & C. R. Co. v. Healy*, 94 Ill. 416, 116 U. S. 191, 6 Sup. Ct. Rep. 352, 29 L. Ed. 607. By Code of Alabama, *Johnson v. State*, 74 Ala. 537. Under Sec. 5346 U. S. Rev. Stat. 1878, 1 Fed. Stat. Ann. 1905, p. 511, U. S. Comp. St. 1901, p. 3630, *Ex parte*, *Byers*, 32 Fed. Rep. 404.

⁴ Ulpian, the Roman jurist, says, that some rivers are perennial; some are torrential. A perennial river is one which flows continually. A torrential river is one which flows in cold weather. If, however, a river which has flowed perennially dries up during a certain summer, it is none the less perennial. *Ware, Roman Water Law*, Sec. 18.

water flows. For a great portion of the year, part of a stream may flow in great abundance, in which during a very dry season we may find only standing pools. It would be against all usage to say that the general source of the river was at that point in its channel from which the water always flows.”⁵ But in order to be within the above definition, it must appear that the water usually flows in a particular direction, and has a regular channel, with bed, banks, or sides. It is distinguished from a lake by its being confined in channel banks, which give it substantially a single course throughout, while a lake occupies a basin of greater or less depth, and may or may not have a single prevailing direction.⁶ However, it bears the name of river where the waters flow and reflow with the tide, as well as where the current is always

⁵ 27 U. S. 2 Peters 417, 7 L. Ed. 470.

⁶ See Lakes, Secs. 294-297.

See Ponds, Secs. 298-300; Jones v. Lee, 77 Mich. 35, 43 N. W. Rep. 855.

See Water Courses, Secs. 301-307; Chasemore v. Richards, 7 H. L. Cas. 349, 5 H. & N. 983, 59 L. J. Exch. N. S. 81, 7 Week Rep. 685, 2 H. & N. 168; Rawstrom v. Taylor, 11 Exch. N. S. 369, 33 Eng. L. & Eq. 428, 25 L. J. Exch. N. S. 33, 4 Week Rep. 290; Broadbent v. Ramsbotham, 11 Exch. 602, 34 Eng. L. & Eq. 553, 25 L. J. Exch. N. S. 115, 4 Week Rep. 290; Luther v. Winnissimet Co., 63 Mass. (9 Cush.) 171; Ashley v. Wolcott, 11 Cush. 192, 195; Parks v. Newburyport, 10 Gray 28, in which the Court held that the passage of water from rain and melting snows for twenty years gives no right to its continuance, as no action will lie for the interruption of mere surface drainage.

See, also, Flagg v. Worcester, 13 Gray 601; Dickinson v. Worcester, 7 Allen 19; Wheeler v. Worcester, 10 Allen 591; Gannon v. Hargadon, 10 Allen 106; Bates v. Smith, 100 Mass. 181; Emery v. Lowell, 104 Mass. 13;

Morrill v. Hurley, 120 Mass. 99; Bassett v. Company, 43 N. H. 578; Coffman v. Griesemer, 26 Pa. St. 407; Earle v. Hart, 1 Beas'l 280, 283, 12 N. J. Eq. 280; State v. Gilmanton, 9 N. H. 461, 14 N. H. 476; Bangor v. Lansil, 51 Me. 521; Greeley v. Maine Central R. Co., 53 Me. 200; Morrison v. Bucksport R. Co., 67 Me. 353; Bufum v. Harris, 5 R. I. 243; Earl v. DeHart, 1 Beas'l 280, 12 N. J. Eq. 280; Bowlsby v. Speer, 31 N. J. L. 351; Gillham v. Madison R. Co., 49 Ill. 484; Shields v. Arndt, 4 N. J. Eq. (3 Green Ch.) 234; Beard v. Murphy, 37 Vt. 99; Swett v. Cutts, 50 N. H. 439, 9 Am. Rep. 276; Hoyt v. Hudson, 27 Wis. 656, 9 Am. Rep. 473; Eulrich v. Richter, 37 Wis. 226, 41 Wis. 318; Eddy v. Simpson, 3 Cal. 249, 58 Am. Dec. 408; Shively v. Hume, 10 Or. 76; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Geddis v. Parrish, 1 Wash. St. 587, 21 Pac. Rep. 314; Crewson v. Grand Trunk R. Co., 27 Q. B. (Can.) 68; New Albany R. Co. v. Peterson, 14 Ind. 112, 77 Am. Dec. 60; Schlieter v. Phillipy, 67 Ind. 201; Greencastle v. Hazelett, 23 Ind. 186.

in one direction.⁷ The term "river" is not limited to the main channel of the stream, but includes the different channels or creeks separating or flowing around intervening islands in the stream, though by local usage such channels or creeks receive different names.⁸ A river does not include lands beyond the banks which are covered in times of freshet or extreme floods, or swamp or low grounds which are liable to overflow, but are reclaimable for meadows or agriculture, or which, being too low for reclamation, though not always covered with water, may be used for cattle to range upon as natural or uninclosed pasture.⁹ The word "river" in a grant which provides that the land extends to a nonnavigable river, and is bounded by it, will be presumed to mean the center or thread of the stream, if there is no limitation in the terms of the grant itself.¹⁰ A State Court may take judicial notice of the location and course of a river frequently mentioned in the statutes of the State.¹¹

§ 309. **Streams as water courses.**—The word "stream" has a number of meanings, but the only one with which we are concerned is the meaning which is nearly, if not quite, synonymous with the term "water course." It is defined as a running water, a flow of water, a current, a water course, a river, a brook, a rivulet.¹ It does not include the waters of a lake.² But, as is the

⁷ *Rex v. Oxfordshire*, 1 B. & Ad. 289, 20 Eng. C. L. 389, 8 L. J. K. B. 354, 109 Eng. Reprint 794; *Rex v. Trafford*, 1 B. & Ad. 874, 8 Bing. 204, 21 Eng. C. L. 272, 109 Eng. Reprint 1011.

⁸ *Schermerhorn v. Hudson River R. Co.*, 38 N. Y. 103.

See the case of *McHardy v. Ellice Twp.* (Can.) 37 U. C. Q. B. 580, distinguishing a river from a creek.

For Creeks, see Sec. 310.

⁹ *Paine Lumber Co. v. U. S.*, 55 Fed. Rep. 854; *State ex rel. Citizens Electric Lighting and Pr. Co. v. Longfellow*, 169 Mo. 109, 69 S. W. Rep. 374.

¹⁰ See *Riparian Rights*, Secs. 450-551; *Paine v. Woods*, 108 Mass. 160;

State v. Gilmanton, 9 N. H. 461, 14 N. H. 467; *Mariner v. Schulte*, 13 Wis. 692; *State of Indiana v. Milk*, 11 Fed. Rep. 389, 11 Bis. 197; *Clement v. Burns*, 43 N. H. 609; *Boston v. Richardson*, 95 Mass. 13 Allen 146; *Banks v. Ogden*, 69 U. S. 2 Wall. 57, 17 L. Ed. 818.

¹¹ *De Baker v. Southern Cal. R. Co.*, 106 Cal. 257, 39 Pac. Rep. 610, 46 Am. St. Rep. 237.

¹ *Illinois Cent. R. Co. v. Chicago*, 173 Ill. 471, 50 N. E. Rep. 1104, 53 L. R. A. 408; *French v. Carhart*, 1 N. Y. 1 Comst. 96, 4 How. Prac. 181; *Long v. Boone County*, 36 Iowa 60.

² *Trustees of Schools v. Schroll*, 120 Ill. 509, 12 N. E. 243, 60 Am. Rep. 575; *Hardin v. Jordan*, 140 U. S. 371,

rule as to other water courses, a stream does not cease to be a water course and become mere surface water because at a certain point it spreads out over a level meadow and flows for a distance without defined banks before again flowing in a definite channel.³

In its ordinary signification, the word "stream" implies a continuous current in one direction, and does not describe a creek or inlet in which the tide ebbs and flows twice a day on the same level.⁴ In the case of *Munson v. Hungerford*,⁵ streams are divided into three classes: (1) Arms of the sea, in which the tide ebbs and flows. These belong to the public. (2) Streams which are navigable. In these the people have the right of eminent domain for the purposes of navigation and commerce, and the riparian owner has also a qualified right to the bed of the stream and the water which flows over it, subordinate to the superior rights of the public. To this class may be added such streams as have been declared by statute to be a public highway. (3) Streams which are so small, shallow, or rapid as "not to afford a passage for the king's people," as Lord Hale expresses it. These streams are altogether private property.⁶ As to boundaries, the word "stream" as used in a deed, as is the case where other nonnavigable water courses are named, passes the title to the center of the stream, unless otherwise limited by the terms of the conveyance itself.⁷

§ 310. Creeks, brooks, and rivulets as water courses.—The word "creek" has two distinct meanings: First, a cove, bay, or inlet,

35 L. Ed. 428, 11 Sup. Ct. Rep. 838; *Gouverneur v. National Ice Co.*, 57 Hun. 474, 11 N. Y. Supp. 87; rev'd 134 N. Y. 355, 31 N. E. Rep. 865, 18 L. R. A. 695, 30 Am. St. Rep. 669.

For distinction between pond and lake, and river or stream, see Secs. 294-307.

³ *Cairo, V. & C. R. Co. v. Brevoort*, 62 Fed. Rep. 129, 25 L. R. A. 527. See, also, Secs. 301, 302.

⁴ *Murdock v. Stickney*, 62 Mass. (8 Cush.) 113; *Johnson v. State*, 114 Ga. 790, 40 S. E. Rep. 807.

⁵ 6 Barb. (N. Y.) 265.

⁶ See, also, as to the construction

of the word "stream," *Adams v. Farmer*, 1 E. D. Smith, 588; *Miller v. Black Rock Sps. Imp. Co.*, 99 Va. 747, 40 S. E. Rep. 27, 86 Am. St. Rep. 924; *Armfield v. State*, 27 Ind. App. 488, 61 N. E. Rep. 693.

⁷ See *Riparian Rights*, Secs. 450-551.

See *Water Courses*, Secs. 301-307; *White's Bank of Buffalo v. Nichols*, 64 N. Y. 65; *Varick v. Smith*, 9 Paige 547; *City of Boston v. Richardson*, 95 Mass. 13 Allen 146; *Babcock v. Utter*, 40 N. Y. (Keyes) 397, 1 Abb. Dec. (N. Y.) 27, 32 How. Prac. 439.

either of the sea or of a river;¹ second, a small river, a rivulet, a small stream of running water.² It is with this latter class that this work has the most to deal. The only difference between a creek and a river is the size and navigable qualities. The same may be said as to the difference between a creek and a brook or rivulet, with the exception of the question of navigation. They are all similar in character and are all water courses.³ A Canadian Court distinguishes between a river and a creek, upon the theory that a creek is a simple stream and that a river is formed by the uniting of several streams.⁴ Riparian rights attach to these small streams, where such rights are allowed, and their waters may be appropriated for beneficial uses and purposes.⁵

§ 311. **Tributaries to natural water courses.**—To be tributary to a thing is to contribute to that thing. Hence the tributaries of natural water courses may be defined as all water courses and streams, both surface and subterranean, which contribute their waters, in however small amounts, to the flow of the main streams.¹ Percolating waters may also be tributary to a natural water course, as will be discussed under that class.² A lake may be tributary to a water course, and *vice versa*.³ Springs are usually tributaries to water courses, or tributary to tributaries thereof.⁴ As to whether or not certain waters are tributary to others is a question of fact to be determined, as are other facts and circumstances of a case;

¹ Schermerhorn v. Hudson R. Co., 38 N. Y. 103.

² Bentner v. Platner, 6 Ohio 504.

³ See Secs. 301-307.

⁴ McHardy v. Ellice (Can.), 37 U. C. Q. B. 580, 1 Can. App. 628, 29 Q. B. (Can.) 546.

⁵ For what waters may be appropriated, see Secs. 641-669.

For the Arid Region doctrine of appropriation, see Chap. 31, Secs. 585-594.

For Riparian Rights, see Chaps. 21-28, Secs. 450-551.

For "wet weather arroyos," see Sec. 312.

See, also, Kroeger v. Twin Buttes R. Co., 13 Ariz. 348, 114 Pac. Rep. 553.

¹ For rights in tributaries, see Sec. 649.

² See Secs. 1193-1196.

³ New Whatcom v. Fairhaven, 24 Wash. 493, 64 Pac. Rep. 735, 54 L. R. A. 190; Cole v. Richards Irr. Co., 27 Utah 205, 75 Pac. Rep. 376, 101 Am. St. Rep. 962; Duckworth v. Watsonville etc. Co., 150 Cal. 520, 89 Pac. Rep. 338; *Id.* 158 Cal. 206, 110 Pac. Rep. 927; Buckers Irr. Mill & Imp. Co. v. Platte Val. Irr. Co., 28 Colo. 187, 63 Pac. Rep. 305.

⁴ Beaverhead Canal Co. v. Dillon Elec. Light & P. Co., 34 Mont. 135, 85 Pac. Rep. 880; Rait v. Furrow, 74 Kan. 101, 85 Pac. Rep. 934, 6 L. R. A., N. S. 157.

they may be determined by evidence of experiments.⁵ But this fact having been once determined, the presumption is that the waters of a tributary will reach the main stream either by surface or by subterranean flow.⁶

Upon the subject of the right to the use of the waters of tributaries, the general rule is that the stream system is to be taken as a whole, in which the upper tributaries are integral parts; and the one having the right to the waters of the main stream has also the right to that of its branches, and to all other tributaries to the full extent of his valid claim, and that, too, whether these be streams, springs, or subterranean waters.⁷ As tributaries are themselves water courses or other waters, and have been discussed under their respective heads in this chapter, and as the rights which may be acquired in the waters of tributaries will be discussed hereafter, nothing further need be said on that subject here.⁸

⁵ "In view of the range of the discussion in the briefs, we suggest that there is no insurmountable difficulty in determining the question of fact in this case by actual physical tests," etc. *Wilson v. Collin*, 45 Colo. 412, 102 Pac. Rep. 20.

⁶ *Peterson v. Payne*, 43 Colo. 184, 95 Pac. Rep. 301; *Josslyn v. Daly*, 15 Idaho 137, 96 Pac. Rep. 568.

⁷ See cases cited in notes above.

For right to the use of waters of tributaries, see Secs. 355, 649.

For the appropriation of the waters of tributaries, see Sec. 649.

For the underflow of surface streams, see Secs. 1161-1163.

For percolations tributary to surface water courses, see Secs. 1193-1195.

For percolations tributary to underground reservoirs, see Secs. 1197-1204.

See, also, *Miller v. Wheeler*, 54 Wash. 429, 103 Pac. Rep. 641, 23 L. R. A., N. S., 1065; *Strickler v. Colo-*

rado Springs, 16 Colo. 61, 26 Pac. Rep. 313, 25 Am. St. Rep. 245; *Evans D. Co. v. Lakeside D. Co.*, 15 Cal. App. 119, 108 Pac. Rep. 1027; *Peterson v. Payne*, 43 Colo. 184, 95 Pac. Rep. 301; *Priest v. Union etc. Co.*, 6 Cal. 170; *Verdugo W. Co. v. Verdugo*, 152 Cal. 655, 93 Pac. Rep. 1021; *Malad etc. Co. v. Campbell*, 2 Idaho 411, 18 Pac. Rep. 52; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *Low v. Rizor*, 25 Ore. 551, 37 Pac. Rep. 82; *Tonkin v. Winzell*, 27 Nev. 88, 73 Pac. Rep. 593; *Boyce v. Cupper*, 37 Ore. 256, 61 Pac. Rep. 642; *Salina Creek v. Salina Stock Co.*, 7 Utah 456, 27 Pac. Rep. 578; *Howcroft v. Union etc. Co.*, 25 Utah 311, 71 Pac. Rep. 487; *Whitmore v. Utah Fuel etc. Co.*, 26 Utah 488, 73 Pac. Rep. 764; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.* 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

⁸ For rights in tributaries, see Secs. 355, 649.

§ 312. Ravines as natural water courses—"Wet weather arroyos."—A ravine may be a water course, but it is not always the case. A ravine is a deep and narrow hollow, usually worn by a stream or torrent of water. It is a gorge or cleft, usually found in the uplands or mountainous country.¹ Of course, if a ravine has all of the essential characteristics of a water course, as described in previous sections,² it is one; but if it is lacking in any one of these requisites, it is not one. A ravine, from the banks of which and into which the water flows from springs throughout the year, is a water course.³ This is true should the ravine have any other permanent water supply. But, as a usual thing, ravines have the channel but not the water supply. Where there is a flow of surface water from rains and the melting of snows at regular seasons, and such has been immemorially the case, it is a natural water course.⁴ But a water course does not include holes, gullies, or ravines in land, in which mere surface water from rain or melting snow, at irregular periods, is discharged through them from a higher to a lower level, and which at other times are destitute of water. In the absence of a permanent source of water supply there can be no water course in its legal sense.⁵

1 A ravine is a long, deep, and narrow hollow worn by a stream or torrent of water; a long, deep, and narrow hollow or pass through mountains. *Long v. Boone County*, 36 Iowa 60.

See *Los Angeles Cem. Ass'n v. Los Angeles*, 103 Cal. 461, 37 Pac. Rep. 375; *Palmer v. Waddell*, 22 Kan. 352; *Denver, T. & Ft. W. R. Co. v. Dotson*, 20 Colo. 304, 38 Pac. Rep. 322.

For appropriation from canyons, gorges and ravines, see Sec. 651.

2 See *Essential Characteristics of a Water Course*, Secs. 302-307.

3 *Maxwell v. Shirts*, 27 Ind. App. 529, 61 N. E. Rep. 754, 87 Am. St. Rep. 268.

4 *Gibbs v. Williams*, 25 Kan. 214, 37 Am. Rep. 241; *Mace v. Mace*, 40 Ore. 586, 67 Pac. Rep. 660, 68 Pac. Rep. 737.

5 *Gregory v. Bush*, 64 Mich. 37, 31

N. W. Rep. 90, 8 Am. St. Rep. 797; *Sanguinetti v. Pock*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169; *Hoyt v. City of Hudson*, 27 Wis. 656, 9 Am. Rep. 473; *Rice v. Evansville*, 108 Ind. 7, 9 N. E. Rep. 139, 58 Am. Rep. 53; *Eulrich v. Richter*, 37 Wis. 226, 41 Wis. 318; *Jeffers v. Jeffers*, 107 N. Y. 650, 14 N. E. Rep. 316; *Benson v. Chicago & A. R. Co.*, 78 Mo. 504; *Jones v. Wabash, St. L. & P. R. Co.*, 18 Mo. App. 251; *Lessard v. Stram*, 62 Wis. 112, 22 N. W. Rep. 284, 51 Am. Rep. 715; *Murray v. Dawson*, 19 U. C. C. P. 314; *Wagner v. Long Island R. Co.*, 2 Hun (N. Y.) 633, 5 N. Y. Sup. Ct. 163; *Dean v. Gray*, 22 U. C. C. P. 202; *Los Angeles Cem. Assn. v. Los Angeles*, 103 Cal. 461, 37 Pac. Rep. 375; *Shields v. Arndt*, 4 N. J. Eq. (3 Green Ch.) 234; *Kansas City & E. R. Co. v. Riley*, 33 Kan. 374, 6 Pac. Rep. 581; *Butler v.*

The distinguishing feature between a ravine and a water course is the permanent water supply. If there is not a permanent water supply, at least at frequent intervals, it is but a ravine; but if there is, it is a water course. As was said in an Oregon case: "Where water, owing to the hilly or mountainous configuration of the country, accumulates in large quantities from rain and melting snow, and at regular seasons descends through long, deep gullies or ravines upon the lands below, and in its onward flow carves a distinct and well-defined channel, which even to the casual glance bears the unmistakable impress of the frequent action of running water, and through which it has flowed from time immemorial; such a stream is to be considered a water course, and to be governed by the same rules."⁶ Owing to the rather indefinite definition of ravines and gullies as water courses, and their frequent occurrence in this intermountain country of the West, the statutes of many of the States provide that the waters of ravines and gullies are those to which rights may be acquired, and they are declared to be public waters.⁷ And, under the statute of New Mexico it is held in a recent case, that "wet weather arroyos" are, in effect, water courses, although for the greater portion of the year they are dry, the water flowing therein only during the wet seasons, the Court saying: "While the term 'water course,' used in the statute, probably as defined and used in England and the Eastern States, would not cover wet weather arroyos, yet, in view of local conditions, which must have been within the knowledge and contemplation of the legislature, and, in view of its

Peck, 16 Ohio St. 334, 88 Am. Dec. 452; Bangor v. Lansil, 51 Me. 521; Abbott v. Kansas City, St. J. & C. B. R. Co., 83 Mo. 271, 53 Am. Rep. 581; Gibbs v. Williams, 25 Kan. 214, 37 Am. Rep. 241; Robinson v. Shanks, 118 Ind. 125, 20 N. E. Rep. 713; Middlesborough Town Co. v. Helwig, 14 Ky. L. Rep. 430; Barkley v. Wilcox, 86 N. Y. 140, 19 Hun 320, 40 Am. Rep. 519; Chicago, K. & W. R. Co. v. Morrow, 42 Kan. 339, 22 Pac. Rep. 413; Weis v. Madison, 75 Ind. 241, 39 Am. Rep. 135; Hagge v. Kansas City S. R. Co., 104 Fed. Rep. 391;

Gray v. Schriber, 58 Mo. App. 173; Los Angeles Cem. Assn. v. Los Angeles, 103 Cal. 461, 37 Pac. Rep. 375; Simmons v. Winters, 21 Ore. 35, 27 Pac. Rep. 7, 28 Am. St. Rep. 727.

⁶ Simmons v. Winters, 21 Ore. 35, 27 Pac. Rep. 7, 28 Am. St. Rep. 727; McClure v. City of Red Wing, 28 Minn. 186, 9 N. W. Rep. 767.

See, also, for the appropriation of water from ravines, Sec. 651.

⁷ For the statutes of the various States upon the subject, see Part 14.

For the appropriation of waters from ravines, see Sec. 651.

use of that expression in connection with the words 'stream of water,' we think the legislature intended, by the use of that expression, to include any well-defined channel or arroyo in which surface or flood waters flow in times of heavy rain." ⁸

§ 313. **Springs and their relation to water courses.**—Springs may be defined as those places where water issues naturally from the surface of the earth and the principal sources of natural water courses.¹ No matter how small the stream flowing from a spring, if it flows with some degree of regularity in a well defined channel, it is a water course. However, if the water simply rises to the surface of the ground and does not flow therefrom, it may be a spring, but its waters are treated as subterranean waters, and not as those of a water course.² Bogs occasioned by seepage water, from which no water flows on the surface, are not springs.³ In order to protect the rights of owners of land upon which springs rise, the statutes of many of the Western States provide to the effect that they shall have the first right to the use of the waters

⁸ *Kroeger v. Twin Buttes R. Co.*, 13 Ariz. 348, 114 Pac. Rep. 553.

¹ See Water Courses, Secs. 301-311. See, also, *Rait v. Furrow*, 74 Kan. 101, 85 Pac. Rep. 934, 6 L. R. A., N. S. 157.

² For rights in the waters of springs, see Sec. 648; *Cohen v. La Canada Water Co.*, 142 Cal. 437, 76 Pac. Rep. 47; *Id.* 151 Cal. 680, 91 Pac. Rep. 584.

See, also, *Pyle v. Richards*, 17 Neb. 180, 22 N. W. Rep. 370; *Wolf v. Crothers*, 21 Pa. Co. Ct. 627; *Brosnan v. Harris*, 39 Ore. 143, 65 Pac. Rep. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; *Miller v. Black Rock Springs Imp. Co.*, 99 Va. 747, 40 S. E. Rep. 27, 86 Am. St. Rep. 924; *Case v. Hoffman*, 100 Wis. 314, 72 N. W. Rep. 390, 74 N. W. Rep. 220, 75 N. W. Rep. 945, 44 L. R. A. 728; *Churchill v. Rose*, 136 Cal. 576, 69 Pac. Rep. 416; *Harrington v. Demaris*, 46 Ore.

111, 82 Pac. Rep. 14, 1 L. R. A., N. S. 756, modifying 46 Ore. 111, 77 Pac. Rep. 603; *Orient M. Co. v. Freckleton*, 27 Utah 125, 74 Pac. Rep. 652; *Wilkins v. McCue*, 46 Cal. 656; *Shenandoah etc. Co. v. Morgan*, 106 Cal. 409, 39 Pac. Rep. 802; *Ely v. Ferguson*, 91 Cal. 187, 27 Pac. Rep. 587; *Le Quime v. Chambers*, 15 Idaho 405, 98 Pac. Rep. 415; *Straight v. Brown*, 16 Nev. 317, 40 Am. Rep. 497; *Morrison v. Officer*, 48 Ore. 569, 87 Pac. Rep. 896; *Church v. State*, — Wash. —, 117 Pac. Rep. 711; *Mason v. Yearwood*, 58 Wash. 276, 108 Pac. Rep. 608; *Miller v. Wheeler*, 54 Wash. 429, 103 Pac. Rep. 641, 23 L. R. A., N. S. 1065; *Youngs v. Regan*, 20 Idaho 275, 118 Pac. Rep. 499.

See, also, for the appropriation of waters of springs, Sec. 648.

³ *Dickey v. Maddux*, 48 Wash. 411, 93 Pac. Rep. 1090.

to the extent of their actual needs before others can claim any right to their waters.⁴

§ 314. **Swales and their relation to natural water courses.**—As was said of ravines,¹ swales may or may not be water courses. It depends entirely upon the fact as to whether or not they have all of the essential characteristics which go to make up a water course.² A swale may be defined as a tract of low and unusually wet land. It is a slight depression or valley, as a plain or moor, often wet and covered with rank vegetation.³ As a general proposition, it may be said that a swale is lacking in some characteristic necessary for a water course. It usually has the water supply, but not the channel or current. In order to constitute a water course there must be a stream flowing usually in the same direction and in a definite channel. Hence it follows that a low body of wet land, without either channel or perceptible current, is not a water course.⁴ 'In fact, it is the almost unanimous doctrine that swales are not, in their strict legal sense, water courses.⁵ But

⁴ For the statutes of the various States upon the subject, see Part 14.

For the appropriation of waters from springs, see Sec. 648.

¹ See Sec. 312.

² See Secs. 301-307.

³ Webster's New Int. Dict. 1911. Subject, Swale.

⁴ Los Angeles Cem. Assn. v. Los Angeles, 103 Cal. 461, 37 Pac. Rep. 375.

A depression or swale which varies in width from 75 feet to 80 feet, with a depth of 6 inches to 2½ feet, and is cultivated when the water is not there, is not a water course. *Sanguinetti v. Poek*, 136 Cal. 466, 69 Pac. Rep. 98, 89 Am. St. Rep. 169.

See, also, *Jones v. Wabash, St. L. & P. R. Co.*, 18 Mo. App. 251; *Bowlshy v. Speer*, 31 N. J. L. 351, 86 Am. Dec. 216; *Byrne v. Keokuk & W. R. Co.*, 47 Mo. App. 383; *Carroll County v. Bailey*, 122 Ind. 46, 23 N. E. 672; *St. Louis, I. M. & S. R. Co. v. Schneider*, 30 Mo. App. 620; *Robinson v.*

Shanks, 118 Ind. 125, 20 N. E. Rep. 713.

But see *Lambert v. Alcorn*, 144 Ill. 313, 33 N. E. Rep. 53, 21 L. R. A. 611; *McClure v. Red Wing*, 28 Minn. 181, 9 N. W. Rep. 767; *Taubert v. St. Paul*, 68 Minn. 519, 71 N. W. Rep. 664; *Earl v. DeHart*, 12 N. J. Eq. 280, 72 Am. Dec. 395; *McKinley v. Union County*, 29 N. J. Eq. 164; *Shane v. Kansas City, St. J. & C. B. R. Co.*, 71 Mo. 237, 36 Am. Rep. 480.

⁵ See cases cited *supra*.

See, also, *Simmons v. Winters*, 21 Ore. 35, 27 Pac. Rep. 7, 28 Am. St. Rep. 727; *Kansas City & E. R. Co. v. Riley*, 33 Kan. 374, 6 Pac. Rep. 581; *Wharton v. Stevens*, 84 Iowa 107, 50 N. W. Rep. 562, 15 L. R. A. 630, 35 Am. St. Rep. 296; *Wagner v. Long Island R. Co.*, 2 Hun, 633, 5 N. Y. Sup. Ct. 163; *Butler v. Peck*, 16 Ohio St. 334, 88 Am. Dec. 452; *Ashley v. Wolcott*, 11 Cush. 192; *Shields v. Arndt*, 4 N. J. Eq. (3 Green Ch.) 234; *Bark-*

upon the other hand, where water which has accumulated from springs, rains, and melting snows, and which has flowed for several miles between regular banks of a well-defined water course which empties into a lake, from which the water flows through water ways, testified to as "swales," "marshes," "depressions," or "hollows," and through which the water flows into a bay or the sea, the water ways referred to are water courses, and the water therein is not mere surface water.⁶

§ 315. **Sloughs as natural water courses.**—A slough is defined as a place of deep mud, a quagmire, a morass.¹ In law it has been defined as an arm of a river apart from the main channel.² It is a "side channel from a river."³

A slough is usually formed by the water of a water course overflowing its banks and running to lands lower than the banks, and there remaining either until it evaporates, or later in the season, when the stream is at a lower stage, it runs back into the stream.⁴ Again, where a part of the water of a stream in its downward course diverges from the main channel and returns to it lower down, it is usually called a slough, and especially if in its separate course it runs with a slow current and through low lands.⁵ As to whether or not a slough is, in its legal sense, a water course, the same rules must be applied as those applied to other streams. It was held in a recent case in California, that where water flows in a slough having well-defined banks leading from a river to a creek, it constitutes a water course, although at some

ley v. Wilcox, 86 N. Y. 140, 19 Hun 320, 40 Am. Rep. 519; Chicago, K. & W. R. Co. v. Morrow, 42 Kan. 339, 22 Pac. Rep. 413.

⁶ West v. Taylor, 16 Ore. 165, 13 Pac. Rep. 665; Macomber v. Godfrey, 108 Mass. 219, 11 Am. Rep. 349; Gillett v. Johnson, 30 Conn. 180; Palmer v. Waddell, 22 Kan. 352; Shields v. Arndt, 4 N. J. Eq. (3 Green Ch.) 245.

See, also, Gibbs v. Williams, 25 Kan. 214, 37 Am. Rep. 241; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Shively v. Hume, 10 Ore. 76; Angell on Water Courses, Sec. 4.

¹ Webster: Slough.

² Dunlieth & Dubuque Bridge Co. v. Dubuque County, 55 Iowa, 558, 8 N. W. Rep. 443.

³ Webster's New Int. Dict., 1911, subject, Slough.

⁴ Lamb v. Reclamation Dist. No. 108, 73 Cal. 125, 14 Pac. Rep. 625, 2 Am. St. Rep. 775; Hagge v. Kansas City etc. Co., 104 Fed. Rep. 391.

⁵ Black River Imp. Co. v. La Crosse Booming & Transp. Co., 54 Wis. 659, 11 N. W. Rep. 443, 41 Am. Rep. 66.

points the channel spreads out and is quite shallow.⁶ As a general proposition, however, sloughs without original water of their own are not water courses, upon which riparian rights, etc., may attach.⁷ Neither are they recognized as water courses which a railroad company, in the construction of its roadbed, may not fill up without openings for water which may seek an outlet in times of extraordinary rainfalls.⁸ However, in an Oregon case,⁹ the Court charged the jury in substance that if they found from the testimony that the waters of a certain creek flowed through a slough, and had been doing so for more than 20 years, that such slough was the channel of the creek. Again, in a recent California case, it was held that the waters of a slough must be regarded as a part of the river and were subject to the same rules of law in connection with the river as those of the river.¹⁰ This was upon the theory that when the river was high it was really a part of the river, and the taking of the water from the slough will affect the flow of the river; and when the river was low, by taking water from the slough it also drew water from the river.

§ 316. **Artificial water courses.**—Artificial water courses include all man-made ditches, canals, tunnels, flumes, or other artificial conduits constructed for the purpose of conveying water.¹ They may be constructed for the purpose of conveying water to the place of use, as in the case of irrigation; or, upon the other hand, they may be constructed to convey water away from the land, as in the case of drainage. Their principal characteristic is their entire artificial construction. These artificial water courses are not governed by the laws of natural water courses, either at

⁶ *Cederburg v. Dutra*, 3 Cal. App. 572, 86 Pac. Rep. 838.

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 917, 10 Pac. Rep. 674; *Green v. Carrotto*, 72 Cal. 267, 13 Pac. Rep. 685.

See *Essential Requisites of a Water Course*, Secs. 301-307.

⁷ *Lamb v. Reclamation Dist.* No. 108, 73 Cal. 125, 14 Pac. Rep. 625, 2 Am. St. Rep. 775; *Hagge v. Kansas City etc. R. Co.*, 104 Fed. Rep. 391; *Jones v. Wabash, St. L. & P. R. Co.*,

18 Mo. App. 251; *St. Louis, I. M. & S. R. Co. v. Schneider*, 30 Mo. App. 620.

⁸ See cases last note, *supra*.

⁹ *Tucker v. Salem Flouring Mills Co.*, 15 Ore. 581, 16 Pac. Rep. 426.

¹⁰ *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S., 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823.

¹ For Rights in Artificial Water Courses, see Secs. 473, 662.

common law or under the Arid Region doctrine of appropriation.² The most common artificial water courses are ditches and canals, used in conducting waters either to or away from lands, and many thousands of which are to be found throughout this western country.³ A water pipe through which water is conducted from a reservoir to a mill has been held to be an artificial water course.⁴ So, also, where all the waters flowing through a tunnel are derived from drainage of a mine and of the country between the mine and the mouth of the tunnel, and from pumpings into the tunnel from lower levels, such tunnel is an artificial water course.⁵

§ 317. **Swamps and marshes.**—The words “swamp” and “marsh” are oftentimes used as synonymous and may be defined as wet, spongy land; soft, low ground, saturated, but which may or may not be covered with water.¹ A swamp or marsh, having none of the essential characteristics of a water course,² can not be considered as such.³ And, therefore, they are governed by other laws than are water courses.⁴ It is therefore held that neither can the water of swamps be appropriated as such under the doc-

23 Farnham, *Waters and Water Rights*, 823-829, and cases cited; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Arkwright v. Gell*, 5 Mees & W. 203, 2 Horn & H. 17, 8 L. J. Exch. N. S. 201; *Sampson v. Hoddinott*, 1 C. B. N. S. 590, 26 L. J. C. P. N. S. 148, 3 Jur. N. S. 243, 5 Week. Rep. 230, 87 E. C. L. 590; *Fox River Flour Co. v. Kelley*, 70 Wis. 298, 35 N. W. Rep. 744.

See, also, as to riparian rights, Secs. 450-551; ditches and canals, Secs. 824-836; rights of way over private lands, Chap. 52, Secs. 972-993; rights of way over public lands, Secs. 927-971.

³ For property in ditches and canals, see Secs. 833, 834.

⁴ *Standart v. Round Val. W. Co.*, 77 Cal. 399, 19 Pac. Rep. 689; *Farmer v. Ukiah Water Co.*, 56 Cal. 11.

⁵ *Cardelli v. Comstock Tun. Co.*, 26 Nev. 284, 66 Pac. Rep. 950.

See, also, as to artificial water courses, *Pewankee v. Savoy*, 103 Wis. 271, 79 N. W. Rep. 436, 50 L. R. A. 836, and note, 74 Am. St. Rep. 859.

¹ Wet, spongy land; soft, low ground, saturated, but not usually covered with water; mostly ground away from the shore. *Webster's Int. Dict.*, 1911, subject, Swamp.

² For the essential characteristics of a water course, see Secs. 301-311.

³ *Hayward v. Mason*, 54 Wash. 649, 104 Pac. Rep. 139; *Dickey v. Maddux*, 48 Wash. 411, 93 Pac. Rep. 1090.

⁴ *Hough v. Porter*, 51 Ore. 318, 372, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

trine of appropriation,⁵ nor do riparian rights attach to swamps.⁶ But where the evidence in a case shows that a certain stream of water was a water course, it does not matter whether it be called "a swag, or a swamp, or a creek, or whether its course is straight or crooked," and the law of water courses applies.⁷

§ 318. **Surface waters proper.**—There is another class of waters to which reference has been made in our discussion of water courses and their essential requisites, which we must now define, and these are surface waters proper. We have also seen that a water course is a permanent stream of water running in a well-defined channel, with a bed and banks.¹ In a future portion of this work we will see that by virtue of the ownership of the banks of a water course certain rights attach to a water course in favor of the owners; that in the arid region, by the appropriation of the waters of a water course certain rights are acquired by the appropriator to the use of the water for beneficial purposes.² These rights are both species of property, and many times of enormous value. They can not be interfered with by persons other than the owners, or by the public. These property rights do not attach to surface water, for the reason that surface water is a vagrant, wandering thing, with no definite locality, or course. Hence, in order to determine whether or not such rights do attach, it becomes necessary, in the first place, to determine whether there is a permanent water course, or whether the water is mere surface water.

"Surface water" may be defined as water on the surface of the ground, the source of which is so temporary or limited as not to be able to maintain for any considerable time a stream or body of water having a well-defined and substantial existence.³ It

⁵ Dickey v. Maddux, 48 Wash. 411, 93 Pac. Rep. 1090.

⁶ Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

For the reclamation Acts of the respective States, see Part XIV.

⁷ Hastie v. Jenkins, 53 Wash. 21, 101 Pac. Rep. 495.

¹ Secs. 301-311. Surface water as such can not be appropriated. See Sec. 654.

² See Riparian Rights, Secs. 450-551.

See Doctrine of Appropriation, Secs. 585-594.

See, also, Injunctions; Damages from Surface Waters.

³ Brandenburg v. Zeigler, 62 S. C. 18, 39 S. E. Rep. 790, 89 Am. St. Rep. 887, 55 L. R. A. 414; Cairo, V. & C. R. Co. v. Brevoort, 62 Fed. Rep. 129, 25 L. R. A. 527; Lawton v. South

continues to be surface water, no matter from what source it comes, until it reaches either some well-defined channel, or some permanent lake or pond, and then it ceases to be surface water and becomes the water of a water course, or a lake or pond, as the case may be.⁴ The sources of surface water are rains, melting snows, occasional outbursts of water, which in times of freshets or melting snows descend from the mountains and inundate the country, and the moisture of wet, spongy, springy, or boggy ground before it forms a defined channel.⁵ Where water is spread out and flows sluggishly over the surface, losing itself by percolation and evaporation, it is surface water, although it has its source in springs.⁶ In some States it is held that water overflowing the banks of a stream is surface water;⁷ in one sense it is surface water, but the weight of authority classifies such waters as flood waters, and as a part of the stream.⁸ Surface water escapes by surface drainage, evaporation, and percolation.⁹ In fact, the chief characteristic of surface water is its inability to maintain

Bound R. Co., 61 S. C. 548, 39 S. E. Rep. 752; Tampa Waterworks Co. v. Cline, 37 Fla. 586, 20 So. Rep. 780, 33 L. R. A. 376, 53 Am. St. Rep. 262.

⁴ Crawford v. Rambo, 44 Ohio St. 279, 7 N. E. Rep. 429; Gillett v. Johnson, 30 Conn. 180; Hinkle v. Avery, 88 Iowa, 47, 55 N. W. Rep. 77, 45 Am. St. Rep. 224.

⁵ Lawton v. South Bound R. Co., 61 S. C. 548, 39 S. E. Rep. 752; Neal v. Ohio R. Co., 47 W. Va. 316, 34 S. E. Rep. 914.

⁶ White v. Sheldon, 35 Hun 191; Schaefer v. Marthaler, 34 Minn. 487, 26 N. W. Rep. 726, 57 Am. Rep. 73; Aleorn v. Sadler, 66 Miss. 221, 5 So. Rep. 694; Hawley v. Sheldon, 64 Vt. 491, 24 Atl. Rep. 717, 33 Am. St. Rep. 941; Town v. Missouri Pac. R. Co., 50 Neb. 768, 70 N. W. Rep. 402; Grand Junction Canal Co. v. Shugar, L. R. 6 Ch. 483, 24 L. T. N. S. 402, 19 Week. Report, 569; Gillett v. Johnson, 30 Conn. 180; Hinkle v. Avery, 88 Iowa

47, 55 N. W. Rep. 77, 45 Am. St. Rep. 224.

⁷ See Flood Waters, Sec. 319; Edwards v. Missouri, K. & T. R. Co., 97 Mo. App. 103, 71 S. W. Rep. 366; Abbott v. Kansas City, St. J. & C. B. R. Co., 83 Mo. 271, 53 Am. Rep. 581; Morrissey v. Chicago, B. & Q. R. Co., 38 Neb. 406, 56 N. W. Rep. 946; 57 N. W. Rep. 522; Crawford v. Rambo, 44 Ohio St. 279, 7 N. E. Rep. 429; O'Connell v. East Tennessee, V. & G. R. Co., 87 Ga. 246, 13 S. E. Rep. 489, 13 L. R. A. 394, 27 Am. St. Rep. 246; Jean v. Pennsylvania Co., 9 Ind. App. 56, 36 N. E. Rep. 159; Shane v. Kansas City, St. J. & C. B. R. Co., 71 Mo. 237, 36 Am. Rep. 480.

⁸ See Flood Waters, Sec. 319; Cairo V. & C. R. Co. v. Brevoort, 62 Fed. Rep. 129, 25 L. R. A. 527.

⁹ Bunderson v. Burlington, B. & Q. R. Co., 43 Neb. 545, 61 N. W. Rep. 721.

its identity and existence as a water course or other body of water,¹⁰ and it escapes by the natural surface drainage of the land from a higher to a lower level, and by evaporation and percolation.¹¹ When, however, surface waters reach and become a part of a natural water course,¹² or collect in a pond or lake, in considerable quantities,¹³ they lose their character as surface waters and come under the rules governing water courses,¹⁴ or lakes and ponds.¹⁵ In each case the question as to whether or not particular water is surface water, or belongs to some other class, is one of fact, to be determined by the circumstances attending its source and continued existence. In an Ohio case,¹⁶ it was said that "surface water is that which is diffused over the surface of the ground, derived from falling rains and melting snows, and continues to be such until it reaches some well-defined channel, in which it is accustomed to, and does, flow with other waters, whether derived from the surface or springs; and then it becomes running water of a stream and ceases to be surface water." ¹⁷

Surface waters are not governed by the same rules of law which govern the waters of water courses or permanent bodies of water. No riparian rights attach, and the Arid Region doctrine of appro-

¹⁰ *Gray v. McWilliams*, 98 Cal. 157, 32 Pac. Rep. 976, 21 L. R. A. 593, 35 Am. St. Rep. 163; *Gray v. Schriber*, 58 Mo. App. 173.

¹¹ *Curtiss v. Ayrault*, 47 N. Y. 73; *Boynton v. Gilman*, 53 Vt. 17; *Rawstron v. Taylor*, 33 Eng. L. & Eq. 428, 25 L. J. Exch. N. S. 33, 11 Exch. N. S. 369, 4 Week. Rep. 290.

¹² *Case v. Hoffman*, 84 Wis. 438, 54 N. W. Rep. 793, 20 L. R. A. 40, 36 Am. St. Rep. 937; *Id.*, 100 Wis. 314, 72 N. W. Rep. 390, 74 N. W. Rep. 220, 75 N. W. Rep. 945, 44 L. R. A. 728; *Schaefer v. Marthaler*, 34 Minn. 487, 26 N. W. Rep. 726, 57 Am. Rep. 73; *Dudden v. Clutton Union, Guardians*, 1 Hurlst. & N. 627, S. C. 26 L. J. Exch. N. S. 146, 38 Eng. L. & Eq. 526.

¹³ *Neal v. Ohio River R. Co.*, 47 W. Va. 316, 34 S. E. 914; *Schaefer v. Marthaler*, 34 Minn. 487, 26 N. W.

Rep. 726, 57 Am. Rep. 73; *Alcorn v. Sadler*, 66 Miss. 221, 5 So. Rep. 694; *Hyatt v. Albroy*, 121 Mich. 638, 80 N. W. Rep. 641; *Hebron Gravel Road Co. v. Harvey*, 90 Ind. 192, 46 Am. Rep. 199.

¹⁴ See *Water Courses*, Secs. 301-311.

¹⁵ See *Lakes*, Secs. 294-297.

See *Ponds*, Secs. 298, 299.

¹⁶ *Crawford v. Rambo*, 44 Ohio St. 279, 7 N. E. Rep. 429.

¹⁷ See, also, *Broadbent v. Ramsbottom*, 11 Exch. 602, 25 L. J. Exch. N. S. 115, 4 Week. Rep. 290, 34 Eng. L. & Eq. 553; *Earl v. De Hart*, 12 N. J. Eq. 280, 72 Am. Dec. 395; *Jones v. Hannovan*, 55 Mo. 462; *Swett v. Cutts*, 50 N. H. 439, 9 Am. Rep. 276; *Gibbs v. Williams*, 25 Kan. 214, 37 Am. Rep. 241; *Palmer v. Waddell*, 22 Kan. 352; *Schaefer v. Marthaler*, 34 Minn. 487, 26 N. W. Rep. 726, 57 Am. Rep. 73.

priation does not apply. A landowner may, however, capture surface water while it is flowing over his land and impound the same in a reservoir or other receptacle, and the water becomes his absolute property so long as it remains under his control, and no one may interfere therewith.¹⁸ But the law of appropriation, as the same is understood in this western country, does not apply. There is no permanent and definite source of supply which can be maintained by the landowner; and, even if it usually drains over the same lands, there is nothing to prevent the upper landowners from cutting off the supply or impounding it upon their lands.¹⁹

§ 319. **Flood or storm waters.**—By the great weight of authority, as well as reason, flood waters are not classified as surface waters. In legal parlance “flood waters” may be defined as those waters, caused by the melting of snow or rains, which swell and overflow the banks of the water courses, and overflow lands not usually covered even in times of high water of the streams. If the water forms a continuous body with the water flowing in the ordinary channels, or if it departs from such channels *animo revertendi*, presently to return when the waters recede, it is flood water and to be regarded as the waters of the streams, and treated in law as such.¹ Flood waters are divided by the authorities into two classes, as follows: “Ordinary floods” and “extraordinary floods.”

¹⁸ *King v. Chamberlain*, — Idaho —, 118 Pac. Rep. 1099; *Vanderwork v. Hewes*, 15 New Mex. 439, 110 Pac. Rep. 567.

¹⁹ For the right to capture surface waters, see Sec. 654.

¹ *Fordham v. Northern Pac. R. Co.* 30 Mont. 421, 76 Pac. Rep. 1049, 66 L. R. A. 556, 104 Am. St. Rep. 729; *Crawford v. Rambo*, 44 Ohio St. 279, 7 N. E. Rep. 429, where the Court said that it is difficult to see upon what principle the flood waters of a river can be likened to surface water.

See, also, *O'Connell v. East Tennessee, V. & G. R. Co.*, 87 Ga. 246, 13 S. E. Rep. 489, 13 L. R. A. 394, 27 Am. St. Rep. 246; *Sulens v. Chicago, R. I. & P. R. Co.*, 74 Iowa 659, 38

N. W. Rep. 545, 7 Am. St. Rep. 501; *Moore v. Chicago, B. & Q. R. Co.*, 75 Iowa, 263, 39 N. W. Rep. 390; *Burwell v. Hobson*, 12 Grat. 322, 65 Am. Dec. 247; *Byrne v. Minneapolis & St. L. R. Co.*, 38 Minn. 212, 36 N. W. Rep. 339, 8 Am. St. Rep. 668; *Jones v. Seaboard Air Line R. Co.*, 67 S. C. 181, 45 S. E. Rep. 188; *Spellman v. Portage*, 41 Wis. 126, 48 N. W. Rep. 210; *Carriger v. East Tennessee, V. & G. R. Co.*, 7 Lea, 388; *Curtis v. Eastern R. Co.*, 98 Mass. 428; *Barden v. Portage*, 79 Wis. 126; 48 N. W. Rep. 210; *West v. Taylor*, 16 Ore. 165; 13 Pac. Rep. 665; *Mitchell v. Bain*, 142 Ind. 604, 42 N. E. Rep. 230.

For the appropriation of flood or storm waters, see Sec. 653.

An ordinary flood is one, the repetition of which, although at uncertain intervals, might, by the exercise of ordinary diligence in investigating the character and habits of the stream, have been anticipated. An extraordinary flood is one of those unexpected visitations whose coming is not foreseen by the usual course of Nature, and whose magnitude and destructiveness could not have been anticipated and prevented by the exercise of ordinary foresight.² By the common law, flood water overflowing the banks of a stream is a part of the stream, although not flowing in the channel.³ The decisions in this country are in hopeless conflict upon the subject, and can not be reconciled, as those of certain States are diametrically opposed to those of others. Indiana,⁴ Missouri,⁵ Kansas,⁶ and Washington⁷ treat the flood waters of the streams as surface waters, to be dealt with as such, according to the rule prevailing in those States.⁸ But in the later cases, especially since the questions of appropriation of waters for beneficial uses have arisen, the Courts hold that flood waters of rivers and streams are not surface waters, but constitute a constituent part of such streams.⁹

² *Town of Jefferson v. Hicks*, 23 Okla. 684, 102 Pac. Rep. 79, 24 L. R. A. N. S. 214, citing 13 Am. & Eng. Ency. of Law, 2d Ed. p. 686.

See, also, for damages from floods; act of God as relief from liability.

³ *King ex rel. Bridgewater v. Trafford*, 1 Barn. & Ed. 874; *Trafford v. King*, 8 Bing. 204; 2 Crompt. & J. 265, 1 Moore & S. 401; *Broadbent v. Ramsbotham*, 11 Exch. 602, 25 L. J. Exch. N. S. 115, 4 Week. Rep. 290, 34 Eng. L. & Eq. 553.

⁴ *Taylor v. Fickas*, 64 Ind. 167, 31 Am. Rep. 114; *Cairo & V. R. Co. v. Stevens*, 73 Ind. 278, 38 Am. Rep. 139; *Cairo & V. R. Co. v. Houry*, 77 Ind. 364; *Shelbyville & B. Turnp. Co. v. Green*, 99 Ind. 205; *Jean v. Pennsylvania R. Co.*, 9 Ind. App. 56, 36 N. E. Rep. 159.

⁵ *McCormick v. Kansas City, St. J. & C. B. R. Co.*, 57 Mo. 433; *Kenney v. Kansas City, P. & G. R. Co.*, 74 Mo.

App. 301; *Schneider v. Missouri P. R. Co.*, 29 Mo. App. 68.

⁶ *Missouri Pac. R. Co. v. Keys*, 55 Kan. 205, 40 Pac. 275, 49 Am. St. Rep. 249.

⁷ *Cass v. Dicks*, 14 Wash. 75, 44 Pac. Rep. 113, 53 Am. St. Rep. 859.

⁸ See, also, *Morris v. Council Bluffs*, 67 Iowa, 343, 25 N. W. Rep. 274, 56 Am. St. Rep. 343, where it is said that "overflowed water is an outlaw, tending to interfere with the legitimate use of the land which it overflows," and that such water is practically surface water. This decision is not in accord with some of the later decisions of Iowa cited in our last note.

In Nebraska, it was first held that the flood waters of a stream were surface waters. *Morrissey v. Chicago, B. & Q. R. Co.*, 38 Neb. 406, 56 N. W. Rep. 946, 57 N. W. Rep. 522.

⁹ *Chicago, B. & Q. R. Co. v. Emmert*, 53 Neb. 237, 73 N. W. Rep. 540, 68

In the majority of the States it is held that these flood, storm, or overflow waters are still a part of the streams, and to be treated as such. The Federal Courts also take this view of the matter, and the United States Circuit Court for the District of Indiana refused absolutely to follow the decisions of the Supreme Court of that State respecting this subject. The Supreme Court, in *Taylor v. Fickas*, and subsequently, held that the flood waters are surface waters.¹⁰ The Federal Court, in *Cairo, V. & C. R. Co. v. Brevoort*,¹¹ held that the flood waters constitute the waters of the rivers and are not surface waters.¹² When once surface water has found its way to the beds of well-defined water courses it ceases to possess any of the characteristics of surface water,¹³ and the mere fact that for the time being the regular channels of the streams are not large enough to carry all of the water that comes down does not change the rule.¹⁴ However, flood water may become surface water. Where water which had been a part of a stream has wandered away from it and entirely lost its connection therewith, and has spread over the adjoining country and settled in low places and has become stagnant, it can no longer be treated as a part of the stream, and the rules governing water courses can no longer be applied to it, but the rules as to surface water are applicable.¹⁵ And again, surface water may become the water of a water course, when it is turned back into the stream.¹⁶ In the Western States flood waters are usually treated as a part of

Am. St. Rep. 602, 108 Am. St. Rep. 647; *Crawford Co. v. Hall* (Hathaway), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 641.

¹⁰ 64 Ind. 167, 31 Am. Rep. 114.

¹¹ 62 Fed. Rep. 129, 25 L. R. A. 527.

¹² See, also, *Sullivan v. Dooley*, 31 Tex. Civ. App. 589, 73 S. W. Rep. 82; *California Pas. & Ag. Co. v. Enterprise C. & L. Co.*, 127 Fed. Rep. 741; *Fifield v. Spring Val. W. Works*, 130 Cal. 552, 62 Pac. Rep. 1054.

See, also, for the appropriation of flood or storm waters, Sec. 653.

¹³ *Mississippi & T. R. Co. v. Archibald*, 67 Miss. 38, 7 So. Rep. 212; *Jones v. Hannovan*, 55 Mo. 462.

¹⁴ *Barden v. Portage*, 79 Wis. 126, 48 N. W. Rep. 210; *Chicago, B. & Q. R. Co. v. Emmert*, 53 Neb. 237, 73 N. W. Rep. 540, 68 Am. St. Rep. 602; *Byrne v. Minneapolis & St. L. R. Co.*, 38 Minn. 212, 36 N. W. Rep. 339, 8 Am. St. Rep. 668; *New York & St. L. R. Co. v. Hamlet Hay Co.*, 149 Ind. 344, 47 N. E. Rep. 1060, 49 N. E. Rep. 269; *Jones v. Seaboard Air Line R. Co.*, 67 S. C. 181, 45 S. E. Rep. 188.

¹⁵ *Munkres v. Kansas City, St. J. & C. B. R. Co.*, 72 Mo. 514; *O'Connell v. East Tenn., V. & G. R. Co.*, 87 Ga. 246, 13 S. E. Rep. 489, 13 L. R. A. 394, 27 Am. St. Rep. 246.

¹⁶ *Sulens v. Chicago, R. I. & P. R. Co.*, 74 Iowa, 659, 38 N. W. Rep. 545,

the streams or water courses, to which the law of appropriation applies.¹⁷

§ 320. **“Developed water”—Description of.**—There is another class of waters, which belongs to none of the classes of natural waters, defined and described in the preceding sections of this chapter, and concerning which we will have considerable to say in the subsequent portions of this work, and this class is called “developed waters.” These waters may be defined as those which have been discovered and developed through the agency of man, and which, under ordinary conditions, would not have appeared at the surface, or have contributed to the flow of any stream or body of water.¹ These waters, coming from the depths of the earth’s surface, are properly originally subterranean.² The rights to these waters will be hereafter discussed, and here it need only be stated that the one who discovers and develops such waters generally has the first right to them, provided that his claim is accompanied by a beneficial use of the same, and that, too, even to the extent of their recapture from the stream into which they are permitted to flow.³ But, upon the other hand, if these developed waters are permitted to escape, without any intent of their recapture, they are treated as abandoned, and others may acquire a right to their use.⁴

§ 321. **“Surplus water”—Definition and description.**—Surplus water may be defined as the water which remains in any stream or body of water after all those who are first entitled to the use of its waters have been fully supplied, and there is still some water remaining unclaimed and unappropriated. The right to the appropriation of the surplus waters will be discussed in other

7 Am. St. Rep. 501; *Moore v. Chicago, B. & Q. R. Co.*, 75 Iowa, 263, 39 N. W. Rep. 390.

¹⁷ For the appropriation of flood waters, see Sec. 653.

For the storage of floor waters, see Chap. 46, Secs. 837-846.

¹ For Developed Waters, see Secs. 1205, 1206.

² For Subterranean Waters, see Secs. 1148-1211.

³ For the Recapture of Water, see Secs. 798-800.

For the right to use a natural stream as a means of the conveyance of water, see Sec. 832.

⁴ For Abandonment of Water, see Chap. 56, Secs. 1099-1117.

portions of this work.¹ In passing it may be said that a great portion of the litigation involving water rights in the West has grown out of disputes as to the rights of prior and subsequent appropriators.²

§ 322. "Waste water"—Definition and description.—Waste water may have three meanings, as follows: First, water that is actually wasted or not needed by the claimant thereto;¹ second, water which, after it has served the purpose of the lawful claimant thereto, has been permitted to run to waste or to escape;² and third, water which, from unavoidable causes, escapes from the ditches, canals, or other works of the lawful claimants.³ These subjects will be subsequently discussed.

§ 323. Subterranean or underground waters—Classification.—Subterranean or underground waters may be defined as those waters which flow, percolate, or lie under the surface of the earth, and are not visible to the eye without exploitation.¹ In order to discuss the question of subterranean or underground waters together, outside of the bare classification of such waters here, we will defer all definitions and a description of their characteristics to another part of this work.² Subterranean or underground waters are divided by the later authorities into three main classes: First, subterranean water courses or streams, which in turn are subdivided into independent subterranean water courses and the underflow of surface streams;³ second, artesian waters;⁴ and, third, percolating waters, which in turn are subdivided into four classes: (1) Diffused percolating waters; (2) percolating waters tributary to surface water courses, or to other bodies of surface waters; (3) percolating waters tributary to underground reservoirs, or catchment basins; and, (4) seepage waters.⁵

1 For the Rights of Subsequent Appropriators, see Secs. 783-786.

2 For the Rights of Prior Appropriators, see Secs. 776-782.

For the Priority of Right, see Sec. 776.

1 For the Economical Use and Suppression of Waste, see Chap. 49, Secs. 874-916.

2 See Sec. 661.

3 For the right to these waters, see Secs. 912, 913.

1 See Secs. 1148-1211.

2 For the classification and definitions of the different classes of subterranean or underground waters, see Part 10, Secs. 1152, 1155, 1187.

3 See Secs. 1154-1161.

4 See Sec. 1167.

5 See Secs. 1185-1211.

PART IV.

RIGHTS OF THE PUBLIC IN WATERS AND WATER COURSES.

CHAPTER 15.

MISCELLANEOUS PUBLIC RIGHTS.

- § 324. Scope of part and chapter.
- § 325. Ownership of the beds—Tide waters—Under common law.
- § 326. Ownership of the beds—Tide waters—Rule in the United States.
- § 327. Ownership of the beds—Great Lakes.
- § 328. Ownership of the beds—Fresh water navigable rivers—Rule under the common law.
- § 329. Ownership of the beds—Fresh water navigable rivers—Rule in the United States.
- § 330. Title to beds—Public land States—State may adopt either rule.
- § 331. Title to beds—Public land States—The rule in the States.
- § 332. Meandered bodies of water—Title between the lines.
- § 333. Ownership in the water—In general.
- § 334. The right to the use of the water does not depend upon the ownership of the bed.
- § 335. Right of access to public waters—From the land side.
- § 336. Right of access to public waters—Obstructions from the water side.
- § 337. Right of the public to gather ice.
- § 338. Right of a State to divert water for power purposes.
- § 339. Right of a State to divert water from a stream for irrigation.
- § 340. Miscellaneous rights of the public.

§ 324. **Scope of part and chapter.**—As we have seen in previous chapters of this work, waters are divided into public and private,¹ largely depending as to whether or not they are navigable or nonnavigable. In public waters the general public have certain rights in the beds,² banks, or shores, as the case may be,³ and also

¹ For classification, see Sec. 287.
See, also, Sec. 290.

² See Secs. 325-331.

³ See Secs. 293, 325, 326.

in the waters of streams or other bodies of water.⁴ In this part of this work it is proposed to discuss the rights which the public have in and to public waters and water courses, and other bodies of water, so far as they affect the main subject of this work. Among these rights may be found the title or ownership of the beds of rivers or other bodies of water,⁵ the right of navigation,⁶ the right of fishing and hunting,⁷ and the rights of the public or State in and to the waters within the boundaries of a certain State, where such waters have been dedicated to the State or public.

In the present chapter we will discuss the title or ownership of the beds or shores of public waters, and other miscellaneous rights that the public have in and to so-called public waters.⁸

§ 325. Ownership of the beds—Tide waters—Under common law.—A body of water does not consist of the water alone, but also of the basin or channel which holds it.¹ All of these natural elements which go to make up a water course are subject to some kind of ownership, either by the State or by the individual. At common law the beds and soil of all tide waters belong to the Crown, or to the State. This is also true of all public rivers, to the extent of the ebb and flow of the tide; to that point only are they deemed, under the common law, navigable, and hence public.² This is the present law of England.³ Waters subject to the influ-

⁴ See Secs. 288, 289, 333-337.

⁵ See Secs. 328-332.

⁶ See Chap. 16, Secs. 341-357.

⁷ See Chap. 17, Secs. 358-371.

⁸ See, also, for riparian rights, Chaps. 21-28, Secs. 450-551.

¹ See *Essentials of a Water Course*, Secs. 301-312.

See, also, Secs. 293-300.

² For the distinction between public and private waters, see Secs. 287, 290.

See, also, Hale, *De Juris Maris*, 111, 16 Am. Rep. 54; *Lyon v. Fishmonger's Co.*, L. R. I. App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

³ Gould on Waters, Secs. 4, 5, 10, and cases cited; *Regina v. Keyn*, 2 Exch.

D. 63, 13 Cox. C. C. 403, 46 L. J. M. C. N. S. 17; *Royal Fisheries of the Banne*, Sir John Davies, 149; *Bulstrode v. Hall*, 1 Sid. 149; *Fitzwalter's Case*, 1 Mod. 105; *Colchester v. Brooke*, 7 Q. B. 339, 15 L. J. Q. B. N. S. 59, 9 Jur. 1090; *Illinois Cent. R. Co. v. State*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *People v. New York & S. I. F. Co.*, 68 N. Y. 71; *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918, citing *Kinney on Irr.*, 1st Ed., Sec. 51; *Dana v. Jackson St. Wharf Co.*, 31 Cal. 118, 89 Am. Dec. 164; *Weber v. Harbor Commissioners*, 85 U. S. 18 Wall. 57, 21 L. Ed. 798; *City of Hoboken v. Pennsylvania R. Co.*, 124 U. S. 656,

ence of the tide are considered arms of the sea, and the ownership is in the Crown because they partake of its nature. This ownership, however, is subject to the rights of the public to the use of these waters for navigation, and other rights which will be discussed. It is well settled that the Crown can grant its rights in these tide waters only subject to the rights of the public. This was true even before statutes were passed to that effect.⁴ But this proposition has been further strengthened by the passage of certain statutes, which prevent the Crown making any grant of these waters except upon conditions imposed by Parliament.⁵ However, with the consent of Parliament, the land under the water may be granted for purposes, so far as such use will be more advantageous than the rights of the public.⁶ All waters, with the exception of tide waters, under the common law in England and Ireland, were considered private, and were so treated; and hence it follows that the lands under these waters were considered and treated as private lands.⁷

§ 326. Ownership of the beds—Tide waters—Rule in the United States.—The rule in the United States as to the ownership of the beds of tide waters is similar to the present rule in England. The title is in the respective States where or through which such waters lie or run; each State, as sovereign, has succeeded to the rights which the Crown formerly possessed in all such waters, and in the soil underneath the water itself. Mr. Gould in his work on waters says upon the subject: “At the time of the Revolution, when the people became sovereign, the respective States succeeded to the title of the Crown in the tide waters within their territorial limits, and to such rights therein as had been previously granted to the local governments established under the royal sanction. Public rights in navigable waters were not affected or impaired by this change of title, and the powers acquired by the States were

31 L. Ed. 543, 8 Sup. Ct. Rep. 643; *Turner v. People's Ferry Co.*, 22 Blatchf. 272, 21 Fed. Rep. 93.

⁴ *Attorney Gen. v. Tomline*, L. R. 12 Ch. Div. 214, L. R. 14 Ch. Div. 58, 49 L. J. Ch. N. S. 377, 42 L. T. N. S. 880, 28 Week. Rep. 870, 44 J. P. 617.

⁵ See Stat. 1 Anne, Ch. 7; also, 10 George IV, Ch. 50.

⁶ *Lowe v. Govett*, 3 Barn. & Ad. 863, 1 L. J. K. B. N. S. 224; *Furman v. New York*, 5 Sanf. 16; affirmed in 10 N. Y. 567.

⁷ For riparian rights, see Secs. 450-551.

those which in England, and in this country previous to the Revolution, could have been exercised by the king alone, or by him in conjunction with Parliament.”¹ The bed or soil of these waters is held by the people of the State in their character as sovereign in trust for the public uses for which they are adapted.² As was well said in a recent Oregon case:³ “At common law the bed of navigable rivers was owned by the king, who held the title for the benefit of the common people. The immigrants to the American Colonies brought with them*to our shores the principles of the common law, and when the independence of the United States was declared the rights of the citizens to the beds and waters of navigable bodies of water became vested in them as a rule of property, subject, however, to the superior right of navigation.” And no alienation of such property by the State which does not recognize and is not in execution of this trust is permissible.⁴ But as this work has very little to do with tide waters, we will pass the subject with the statement of the above propositions.

¹ Gould on Waters, Sec. 32, and cases cited.

See, also, *Howard v. Ingersoll*, 54 U. S. 13 How. 381, 14 L. Ed. 189; 17 Ala. N. S. 780; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Pollard v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565; *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *People v. New York & S. I. F. Co.*, 68 N. Y. 71; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 377, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Head v. Amoskeag Mfg. Co.*, 113 U. S. 9, 28 L. Ed. 889, 5 Sup. Ct. Rep. 441; *Rundle v. Delaware & Raritan Canal Co.*, 55 U. S. 14 How. 81, 14 L. Ed. 335; *Home of Aged v. Commonwealth*, 202 Mass. 422, 89 N. E. Rep. 124, 24 L. R. A. N. S. 79.

² *Illinois Cent. R. Co. v. Illinois*, *supra*.

³ *Micelli v. Andrus*, — Ore. —, 120 Pac. Rep. 737.

⁴ *Pollard v. Hagan*, *supra*; *Den ex*

dem. Russell v. The Jersey Co., 56 U. S. 15 How. 426, 14 L. Ed. 757; *Mumford v. Wardell*, 73 U. S. 6 Wall. 423, 18 L. Ed. 756; *Weber v. State Harbor Comrs.*, 85 U. S. 18 Wall. 57, 21 L. Ed. 798; *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *Manchester v. Massachusetts*, 139 U. S. 260, 35 L. Ed. 159, 11 Sup. Ct. Rep. 559; *Smith v. Maryland*, 59 U. S. 18 How. 71, 15 L. Ed. 269; *Stockton v. Baltimore & N. Y. R. Co.*, 32 Fed. Rep. 9; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *United States v. Mission Rock Co.*, 189 U. S. 391, 47 L. Ed. 865, 23 Sup. Ct. Rep. 606, holding the State of California has absolute title to the soil under the tide waters within the limits of the State.

See, also, *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210.

§ 327. **Ownership of the beds—Great Lakes.**—As we have seen,¹ it is the settled law of this country that the ownership of and dominion and sovereignty over lands covered by tide waters, within the limits of the several States, belong to the respective States within which they are found, subject to the rights of the public. Our large fresh water lakes are wholly unprovided for by the common law, and hence the rule was extended to include them in the class of public waters.² Under the common law, in England and Ireland, all lakes are considered private property, owing, undoubtedly, to the fact that they are all small.³ This doctrine respecting tide waters, originating in the common law, has been enlarged and extended in the United States so as to include the lands covered by the fresh water of the Great Lakes. These waters possess all of the general characteristics of open seas, except in the freshness of their waters, and the absence of the ebb and flow of the tide. In all other respects they are inland seas. And, as was said by Mr. Justice Field, in the case of *Illinois Cent. R. Co. v. Illinois*, "There is no reason or principle for the assertion of dominion and sovereignty over and ownership by the State of lands covered by tide waters that is not equally applicable to its ownership of and dominion of and sovereignty over lands cov-

¹ Secs. 325, 326.

² For riparian rights on lakes and ponds, see Secs. 329-332.

Canal Com. *et al.* v. People, 5 Wend. 423, 446; Canal Appraisers v. People, 17 Wend. 571, 597, 616, 621; 3 Kent. Com. 429, note 430a; *Kingman v. Sparrow*, 12 Barb. 201, rev'd N. Y. 242, 4 How. Prac. 367; *King v. Smith*, 4 Doug. 441; *Ledyard v. Ten Eyck*, 36 Barb. 102. In *Fletcher v. Phelps*, 28 Vt. 257; *Jakeway v. Barrett*, 38 Vt. 316, 323, and *Austin v. Rutland R. Co.*, 45 Vt. 215, 17 Fed. Rep. 466, it was held that lands bounded on Lake Champlain extend to the edge of the water at low water mark; *State v. Franklin Falls Co.*, 49 N. H. 240, 6 Am. Rep. 513; *State v. Gilmanston*, 9 N. H. 461, 14 N. H. 467; *Waterman v. John-*

son, 13 Pick. 261; *Hogg v. Beeman*, 41 Ohio St. 81; *Sloan v. Biemiller*, 34 Ohio St. 492; *People ex rel. Moloney v. Kirk*, 162 Ill. 138, 45 N. E. Rep. 830, 53 Am. St. Rep. 277; *Champlain etc. R. Co. v. Valentine*, 19 Barb. 484.

³ *Devonshire v. Pattinson*, 20 Q. B. Dec. 263; *Holford v. Bailey*, 8 Q. B. 1000; *Pery v. Thornton*, 23 L. R. Ir. 402. See remarks of Gray, J., in *Pain v. Woods*, 108 Mass. 160, 169 (1871), citing *Duke* (ed. 1805), 8, 129; *Marshall v. Ulleswater Steam Navigating Co.*, 3 B. & S. 732; 113 Eng. C. L. 732, 742, citing *Hale, De Jure Maris*, Ch. 1; *Hunt on Boundaries and Fences* (2d Ed.), 19; *Greyes' Case*, Owen, 20; *Somerset v. Fogwell*, 5 B. & C. 875 (E. C. L. R. Vol. II); *Pollenfen v. Crispin*, 1 Vent. 122; *Bell's Law*

ered by the fresh water of these lakes." ⁴ Hence it follows, that the common law doctrine limiting the ownership of waters and the soil under them in the State to those waters only which are under the influence of the tide has been repudiated in this country, as far as the Great Lakes are concerned. And, in this country, the principle which retains title in the public extends to all lakes which are capable of navigation.⁵ The title of the riparian proprietors on these Great Lakes extends to low-water mark;⁶ but the title below the high-water mark is subject to public use, so that the absolute title of the riparian owner extends only to the high-water mark.⁷ The Great Lakes of this country are not in any appreciable respect affected by the tide, and yet on their waters a large commerce is carried on, exceeding in many instances the entire commerce of States on the borders of the sea. The public being so extensively interested in the use of such waters, the ownership and possession of the soil under these waters can not be permitted, except by license of the States, which alone can exercise such dominion over these waters as will insure freedom in their use so far as consistent with the public interests. The doctrine is founded upon the necessity of preserving to the public the use of navigable waters from private interruption and encroachment, a reason as applicable to navigable fresh waters as to waters moved by the tide.⁸

of Scotland, 171; Com. Dig. Prerogative (D. 50); 3 App. Cas. 641; S. C. R. 10 C. L. 398, 412; 2 L. R. Ir. 118.

⁴ 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

⁵ *McCue v. Bellingham Bay Water Co.*, 5 Wash. 156, 31 Pac. Rep. 461; *Delaplaine v. Chicago & N. W. R. Co.*, 42 Wis. 214, 24 Am. Rep. 386; *Diedrich v. Northwestern Union R. Co.*, 42 Wis. 248, 24 Am. Rep. 399; *Revell v. People*, 177 Ill. 468, 52 N. E. Rep. 1052, 43 L. R. A. 790, 69 Am. St. Rep. 257; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Zeller v. Southern Yacht Club*, 34 La. Ann. 838; *People v. Silberwood*, 110 Mich. 103,

67 N. W. Rep. 1087, 32 L. R. A. 694; *Buffalo etc. R. Co. v. Goderich*, 21 U. C. Q. B. 97.

⁶ *Lincoln v. Davis*, 53 Mich. 375, 19 N. W. Rep. 103, 51 Am. Rep. 116; *Miller v. Mendenhall*, 43 Minn. 95, 44 N. W. Rep. 1141, 8 L. R. A. 89, 19 Am. St. Rep. 219; *Union Depot Street R. & Transp. Co. v. Brunswick*, 31 Minn. 297, 17 N. W. Rep. 626, 47 Am. Rep. 789.

⁷ *People ex rel. Burham v. Jones*, 112 N. Y. 597, 20 N. E. Rep. 577.

See riparian rights, Secs. 450-551.

⁸ *Illinois Cent. R. Co. v. Illinois*, *supra*.

§ 328. **Ownership of the beds—Fresh water navigable rivers—Rule under the common law.**—The modern rule in England as to the ownership of fresh water navigable rivers is that the riparian owners own the beds of the streams, subject to the rights of the public to use the streams for navigation. Upon an examination it will be found that with respect to the property in large rivers, which being navigable in fact resemble tidal rivers, and being fresh partake of the nature of small nonnavigable streams, there is a great conflict of both the early and more recent authorities as to whether the river is to be held as private property or belonging to the Crown, State, or public. Bracton, the Chief Justice of England in the reign of Henry III and one of the earliest writers upon this subject, says that “all rivers are public, and that the Crown or public has the right of fishing therein and the use of the banks.” He makes no distinction between those rivers which are navigable in fact and those which are not.¹ It is charged that Bracton follows the civil law, but from whatever source this theory comes, it is not the modern common law rule,² which is, as held in the case of *Murphy v. Ryan*,³ that beyond the point to which the tide ebbs and flows, even in a river actually navigable and so used by the public, the soil is *prima facie* in the riparian proprietors. And the English law has become settled in accordance with this view, that the title of the riparian owners extends to the center of all nontidal streams, whether the same are actually navigable or not; but this title is subject to the general right of navigation of the public. In respect to this right, the common law authorities also differ, as to whether prescription is the ground upon which the right of navigation in these waters depends, or whether all tidal and fresh rivers which are navigable in fact are common highways

¹ Gould on Waters, Secs. 46-79; 1 Ld. Raym. 726, 6 Mod. 163; Bracton, Lib. 1, Ch. 12, pp. 7 and 8; Farm Investment Co. v. Carpenter, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918, citing Kinney on Irr., 1st Ed., Sec. 53; Lyon v. Fishmonger's Co., L. R. 1 App. Cas. 682; Hale, De Jure Maris, Ch. 111.

² Gould on Waters, Sec. 47; Angell on Water Courses, Sec. 551.

For rule of civil law, see Justinian, 1st Lib. 11, Tit. 1, Sec. 4, which is as follows: “By the law of nations the use of the banks is *as public as the rivers*: therefore all persons are at equal liberty to land their vessels, unload them, and to fasten ropes to trees upon the banks, *as to navigate upon the river itself*.”

³ Ir. R. 2 C. L., 143.

and, *prima facie*, *publici juris*. But from whatever source the right of the public to navigation is derived, this may be stated as the common law rule, that all rivers entirely above the influence of the tide, if they are so large as to be navigable in fact, for the passage of vessels and boats, are, as well as the tidal rivers, under the servitude of the public interest, and the public have the paramount right to use the same as highways.⁴ But as to the ownership of the beds of these rivers, private ownership is the rule in England, notwithstanding the fact that the rivers are navigable and have been immemorially navigated for commerce and other purposes.⁵ The right which the public has in such a river is substantially a mere easement to use the river for the purposes of navigation similar to the right the public may have to passage along a public road or footpath through a private estate.⁶

⁴ Price v. Scotcher, 9 Q. B. D. 162; Tilbury v. Silva, 45 Ch. D. 98, 62 L. T. N. S. 254; Ewing v. Colquhoun, 2 App. Cas. 839; Dwyer v. Rich, Ir. 4, C. L. 424; Miller v. Little, 2 L. R. Ir. 304; Lord Hale, De Jure Maris et Portibus.

In the case of Bath River Navigation Co. v. Willis, 2 Cases of Ry. & Canals, 7, where an act of Parliament had been passed, authorizing certain persons to use a certain part of the River Avon for navigation, and to use the banks as towing paths, the Court held that satisfaction should first be given to the owners of the land abutting on the river. Also, see Ball v. Herbert, 3 T. R. 253; Hargreaves v. Diddams, L. R. 10 Q. B. 582, 44 L. J. M. C. N. S. 178, 32 N. T. L. S. 600, 23 Week. Rep. 828; Bristow v. Cormican, 3 App. Cas. 641, 666; Bloomfield v. Johnson Ir. R. 8, C. L. 68; Devonshire v. Pattison, 20 Q. B. D. 263; King v. Montague, 4 B. & C. 598, 6. Dowl. & R. 616, 4 L. J. K. B. 21; Coulson & Forbes on Waters, Secs. 92, 93, 94; Hale, De Jure Maris, Ch. 1, 2, 3; Har-

greaves Law Tracts, 6, 8, 9; Williams v. Wilcox, 8 Ad. & El. 314, 332, 3 Nev. & P. 606, 1 W. W. & H. 477, 7 L. J. Q. B. N. S. 229; Royal Fishery of River Banne, Davies R. 149.

Lord Hale explains this question in his De Jure Maris, as follows: That all rivers above the tidal point are regarded as public, not in reference to the property in the soil or the bed of the river, but only in reference to public use for navigation. Thus, the riparian proprietors have title to the bed of the rivers, and the rights of fishery in rivers of this class, subject to this right of navigation. Gould, Chap. IV; Colchester v. Brooks, 7 Q. B. 339; Callis on Sewers, 78, and cases above cited.

⁵ Murphy v. Ryan, Irr. Rep. 2 C. L. 143, 16 Week. Rep. 678; King v. Wharton, Holt 499, 12 Mod. 510; Do-remus v. Paterson, 65 N. J. Eq. 711, 55 Atl. Rep. 304; Woolrych on Waters, p. 44.

See, also, riparian rights, Secs. 450-551.

⁶ Ewing v. Colquhoun, L. R. 2 App. Cas. 839.

§ 329. **Ownership of the beds—Fresh water navigable rivers—Rule in the United States.**—In the fresh water navigable rivers of the United States, the public have the right of navigation and other rights which we will discuss in this chapter, although the rule as to the ownership of the beds of these streams differs in many of our States. Many of these rivers are navigable for great distances above the flow of the tide; indeed, for hundreds of miles, and by the largest vessels used in commerce. They are all public rivers under our classification,¹ in the sense that the public have certain rights in them, which it does not have in nonnavigable or private streams, and that, to, whether or not any specific rule has been adopted by the constitutions or statutes of those States through which or by the side of which these waters flow. After the American Revolution the absolute right to all navigable rivers and soils under them, within each State, was held by its people for their common use, subject only to the rights since surrendered by the Constitution to the general Government.² Therefore, each State may, by its constitution or by its statute, adopt whatever rule it sees fit, as to the public or private ownership of these streams and the beds thereof. Some of the States have done so. Most of the States, however, have merely adopted the common law by general statutory provisions, and by so doing they declared the title to the bed of fresh water streams to be in the riparian proprietors.³ In this country the modern common law rule relative to the ownership of the soil under fresh water navigable rivers has been followed as the law of many States, and the riparian owners own the soil to the center of the stream.⁴ In general this rule is in force in all of the New England States, where the rivers of this class are comparatively unimportant, and the soil under navigable nontidal rivers is held to be private property, the title to which

¹ See Sec. 287.

² *Morris v. U. S.*, 174 U. S. 196, 43 L. Ed. 946, 19 Sup. Ct. Rep. 649; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823.

³ For the power of a State to adopt such laws relative to the government of waters and water courses as it sees fit, see Sec. 593.

⁴ *Ingraham v. Wilkinson*, 4 Pick. 268, 16 Am. Dec. 342; *Commissioners' Canal Fund v. Kempell*, 26 Wend. 404; *Brown v. Chadbourne*, 31 Me. 9, 50 Am. Dec. 641; *Adams v. Pease*, 2 Conn. 481; *Commonwealth v. Alger*, 7 Cush. 53; *Walker v. Board of Public Works*, 16 Ohio 540; *Barnes v. Racine*, 4 Wis. 454.

is in the riparian owners.⁵ The English rule is also adopted in New Jersey, Delaware, Maryland, Georgia, and in Michigan and

⁵ *Connecticut*—Adams v. Pease, 2 Conn. 481; Bissel v. Southworth, 1 Root 269; Welles v. Bailey, 55 Conn. 292, 10 Atl. Rep. 565, 3 Am. St. Rep. 48; Warner v. Southworth, 6 Conn. 471; Chapman v. Kimball, 9 Conn. 38, 21 Am. Dec. 707; Enfield Bridge Co. v. Hartford R. Co., 17 Conn. 40, 42 Am. Dec. 716; Mill River Woolen Mfg. Co. v. Smith, 34 Conn. 462.

New Hampshire—Scott v. Wilson, 3 N. H. 321; Claremount v. Carlton, 2 N. H. 371, 9 Am. Dec. 88; Rix v. Johnson, 5 N. H. 520, 22 Am. Dec. 472; Norway Plaines Co. v. Bradley, 52 N. H. 86; Kimball v. Schoff, 40 N. H. 190; State v. Gilmanton, 9 N. H. 461, 14 N. H. 467; Greenleaf v. Kilton, 11 N. H. 530; Connecticut River Lumber Co. v. Olcott Falls Co., 65 N. H. 290, 21 Atl. Rep. 1090, 13 L. R. A. 826; Concord Mfg. Co. v. Robertson, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679; State v. Canterbury, 28 N. H. 195; Nicholls v. Suncock Mfg. Co., 34 N. H. 345; Clement v. Burns, 43 N. H. 609; Thompson v. Androscoggin River Imp. Co., 54 N. H. 545; Carter v. Thurston, 58 N. H. 104, 42 Am. Rep. 584.

Maine—Pejepsco Proprietors v. Cushman, 2 Me. 94; Berry v. Carle, 3 Me. 269; Morrison v. Keene, 3 Greenl. 474; Lincoln v. Wilder, 29 Me. 169; Spring v. Russell, 7 Me. 273; Simpson v. Seavey, 8 Me. 138, 22 Am. Dec. 228; Wadsworth v. Smith, 11 Me. 278, 26 Am. Dec. 525; Nickerson v. Crawford, 16 Me. 245; Brown v. Chadbourne, 31 Me. 9, 50 Am. Dec. 641; Knox v. Chaloner, 42 Me. 150; Moor v. Veazie, 32 Me. 343, 52 Am. Dec. 655, 31 Me. 360; *Id.*, 55 U. S. 14 How. 568, 14 L. Ed. 545; Mansur v. Blake, 62 Me. 38; Strout v. Mill-

bridge Co., 45 Me. 76; Veazie v. Dwinel, 50 Me. 497; Holden v. Robinson Mfg. Co., 65 Me. 215.

In Granger v. Avery, 64 Me. 292, it was held that the owner of the lands on both sides of a river, above tide water, owned also the islands therein.

In Bradford v. Cressey, 45 Me. 9, it was said that in this country, in consequence of the greater size and navigable character of many of our rivers, the common law doctrine of riparian proprietors has been modified to some extent, and in many instances restricted to nonnavigable fresh water rivers.

Rhode Island—Hughes v. Providence etc. R. Co., 2 R. I. 493; Olney v. Fenner, 2 R. I. 211, 57 Am. Dec. 711.

Massachusetts—Tyler v. Wilkinson, 4 Mason 397, Fed. Cas. No. 14,312; King v. King, 7 Mass. 496; Storer v. Freeman, 6 Mass. 435, 4 Am. Dec. 155; Hatch v. Dwight, 17 Mass. 286, 10 Am. Dec. 145; Ingraham v. Wilkinson, 4 Pick. 268, 16 Am. Dec. 243; Commonwealth v. Chapin, 5 Pick. 199, 16 Am. Dec. 386; Waterman v. Johnson, 13 Pick. 261; Bardwell v. Ames, 39 Mass. 22; Hopkins Academy v. Dickinson, 9 Cush. 544; Commonwealth v. Alger, 7 Cush. 53; McFarlin v. Essex Co., 10 Cush. 304, 309; Blood v. Nashua R. Co., 2 Grey 137, 61 Am. Dec. 444; Boston v. Richardson, 13 Allen 146, 154; Commonwealth v. Vincent, 108 Mass. 441; Deerfield v. Arms, 17 Pick. 41, 28 Am. Dec. 276; Knight v. Wilder, 2 Cush. 199, 48 Am. Dec. 660.

Vermont—Fletcher v. Phelps, 28 Vt. 257; Newton v. Eddy, 23 Vt. 319.

Wisconsin, except as to streams included in the original United States Survey, and then the owners of the adjacent lands take *at least* to the water's edge, subject always to the public right of navigation.⁶ The common law rule is also followed in Illinois,

⁶ *St. Paul etc. R. Co. v. Schurmeir*, 74 U. S. 7 Wall. 272, 19 L. Ed. 74; *Middleton v. Prichard*, 4 Ill. 510, 38 Am. Dec. 112; *Wright v. Day*, 33 Wis. 260; *Delaplaine v. Chicago R. Co.*, 42 Wis. 314.

New Jersey—*Arnold v. Mundy*, 6 N. J. L. 1, 10 Am. Dec. 356, 385; *Gough v. Bell*, 22 N. J. L. 441; *Bell v. Gough*, 23 N. J. L. 624; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Rundell v. Delaware Canal Co.*, 1 Wall. Jr. 275; *Fed. Cas. No. 12,139*; *Atty. Gen. v. Delaware R. Co.*, 27 N. J. Eq. 1, 631; *Society v. Low*, 17 N. J. Eq. 19; *Cobb v. Davenport*, 32 N. J. L. 369, 380.

Delaware—*Delaney v. Boston*, 2 Harr. (Del.) 489; *Bickell v. Polk*, 5 Harr. 325.

Maryland—*Ridgley v. Johnson*, 1 Bland Ch. 316; *Baltimore v. McKim*, 3 Bland Ch. 453; *Browne v. Kennedy*, 5 H. & J. 195, 9 Am. Dec. 503; *Binney's Case*, 2 Bland Ch. 99; *Casey v. Inloes*, 1 Gill. 430, 39 Am. Dec. 658; *Day v. Day*, 22 Md. 530; *Goddsell v. Lawson*, 42 Md. 348; *Chapman v. Hoskins*, 2 Md. Ch. Dec. 485.

Georgia—*Young v. Harrison*, 6 Ga. 130, 141; *Jones v. Water Lot Co.*, 18 Ga. 539; *Stanford v. Mangin*, 30 Ga. 355; *Hendrick v. Cook*, 4 Ga. 241.

But in some of the above cases, it does not seem clear whether the term, "navigable" is used in its common law sense, or not. Navigable waters have been the subject of considerable legislative enactments in this State. See code 1882, Sec. 2229. See, also, *Moses v. Eagle Mfg. Co.*, 62 Ga. 455.

Michigan—*Lorman v. Benson*, 8

Mich. 18, 77 Am. Dec. 435; *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209; *Norris v. Hill*, 1 Mich. 202; *Ryan v. Brown*, 18 Mich. 196; *Clark v. Campau*, 19 Mich. 325; *Watson v. Peters*, 26 Mich. 508; *Bay City Gas Light Co. v. Industrial Works*, 28 Mich. 182; *Grand Rapids Booming Co. v. Jarvis*, 30 Mich. 308; *Thunder Bay B. Co. v. Speechly*, 31 Mich. 336, 18 Am. Rep. 184; *Maxwell v. Bay City Bridge Co.*, 41 Mich. 453, 466, 2 N. W. Rep. 639; *Backus v. Detroit*, 49 Mich. 110, 13 N. W. Rep. 380, 43 Am. Rep. 447; *Lincoln v. Davis*, 53 Mich. 375, 19 N. W. Rep. 103, 57 Am. Rep. 116; *Jones v. Lee*, 77 Mich. 35, 43 N. W. Rep. 855; *Turner v. Holland*, 65 Mich. 453, 33 N. W. Rep. 283; *Fletcher v. Thunder Bay B. Co.*, 51 Mich. 277, 16 N. W. Rep. 645; *Weber v. Pere Marquette Boom Co.*, 62 Mich. 626.

Exceptions—*Twogood v. Hoyt*, 42 Mich. 609; *Rice v. Ruddiman*, 10 Mich. 125; *Pere Marquette Boom Co. v. Adams*, 44 Mich. 403, 6 N. W. Rep. 857; *Clute v. Fisher*, 65 Mich. 48, 31 N. W. Rep. 614.

But see *La Plaisance Bay Harbor Co. v. Monroe, Walk.* (Mich.) 155, where the court held "that the beds of all meandered streams and navigable waters belong to the State," which doctrine has been overruled, and the doctrine of the common law as to ownership is now the settled law of the State. See *Lorman v. Benson*, 8 Mich. 18, 17 Am. Dec. 435.

Wisconsin—*Jones v. Pettibone*, 2 Wis. 308; *Stevens Point Boom Co. v. Reilly*, 44 Wis. 295, 46 Wis. 237, 49

where no reservation is made by the Government.⁷ Ohio also holds that the owners of lands situated upon this class of streams own the river beds, subject to the public right of navigation.⁸

But in Pennsylvania, North Carolina, and Virginia, it has been determined that the common law does not prevail, and that the ownership of the bed or soil of all rivers which are navigable in fact for any useful purpose of trade or agriculture, whether tidal or fresh water, is in the State. The ebb and flow of the tide has been held not to be the real test of the navigability of a river. If

N. W. Rep. 978; *Cohn v. Wausau Boom Co.*, 47 Wis. 314, 2 N. W. Rep. 546; *Walker v. Shepperdson*, 4 Wis. 486, 2 Wis. 384, 60 Am. Dec. 423; *Kimball v. Kenosha*, 4 Wis. 321; *Cobb v. Smith*, 16 Wis. 661; *Wood v. Hustis*, 17 Wis. 416; *Yates v. Judd*, 18 Wis. 118; *Wisconsin R. Imp. Co. v. Lyons*, 30 Wis. 61; *Arimond v. Green Bay Co.*, 31 Wis. 316; *Olson v. Merrill*, 42 Wis. 203; *Diedrich v. N. W. Ry. Co.*, 42 Wis. 248; *Janesville v. Carpenter*, 77 Wis. 288, 46 N. W. Rep. 128, 8 L. R. A. 808, 20 Am. St. Rep. 123.

Exceptions—*Wright v. Day*, 33 Wis. 260; *Delaplaine v. Chicago R. Co.*, 42 Wis. 214, 24 Am. Rep. 386; *Menasha Wooden Ware Co. v. Lawson*, 70 Wis. 600, 36 N. W. Rep. 412.

Indiana—*Stenson v. Butler*, 4 Blackf. 285; *Gentile v. State*, 29 Ind. 409; *Ross v. Faust*, 54 Ind. 471, 475, 23 Am. Rep. 655; *Dawson v. James*, 64 Ind. 162; *Bainbridge v. Sherlock*, 29 Ind. 364, 95 Am. Dec. 644. It will be seen from an examination of the above authorities that in this State the ownership of the bed of a fresh-water navigable stream is somewhat in doubt.

Illinois—*Middleton v. Prichard*, 3 Scam. 510, 38 Am. Dec. 112; *Ensinger v. People*, 47 Ill. 384, 95 Am. Dec. 495; *Canal Trustees v. Haven*, 10 Ill. 5 Gilman 548; *Chicago v. Mc-*

Ginn, 51 Ill. 266, 2 Am. Rep. 295; *People v. St. Louis*, 10 Ill. 5 Gilman 351, 48 Am. Dec. 339; *Hubbard v. Bell*, 54 Ill. 110, 5 Am. Rep. 98; *Illinois v. Illinois Cent. R. Co.*, 33 Fed. Rep. 730; *Houck v. Yates*, 82 Ill. 179; *Washington Ice Co. v. Shortall*, 101 Ill. 46, 40 Am. Rep. 196.

See, also, *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838; rev'g 16 Fed. Rep. 823, in which the Court held: "That it depends upon the laws of each State to what extent the prerogative of the State to lands under the water shall extend." *Brooklyn v. Smith*, 104 Ill. 429, 44 Am. Rep. 90; *Piper v. Connolly*, 108 Ill. 646; *Griffin v. Johnson*, 161 Ill. 377, 44 N. E. Rep. 206; *Rock Island etc. Co. v. Leisy Brewing Co.*, 174 Ill. 547, 51 N. E. Rep. 527; *Bellefontaine Imp. Co. v. Nedringhaus*, 181 Ill. 426, 55 N. E. Rep. 184, 72 Am. St. Rep. 269; *St. Louis v. Rutz*, 138 U. S. 226, 34 L. Ed. 941, 11 Sup. Ct. Rep. 337.

⁸ *Gavit v. Chambers*, 3 Ohio 491; *Lamb v. Rickets*, 11 Ohio 311; *Blanchard v. Porter*, 11 Ohio 138, *Walker v. Board of Public Works*, 16 Ohio 540; *Hickok v. Hine*, 23 Ohio St. 523, 13 Am. Rep. 255; *Niehans v. Shepherd*, 26 Ohio St. 40; *Sloan v. Biemiller*, 34 Ohio St. 492, 512; *Day v. R. R. Co.*, 44 Ohio St. 406, 7 N. E. Rep. 528.

a river be deep enough for sea vessels to navigate to and from the ocean, it is a navigable stream and held to be public, and the boundary of the adjacent land is not the thread or middle of the channel, but the edge of the water, at low-water mark.⁹ In the following States the authorities are divided upon the subject. In New York the earlier decisions hold that the common law rule does not apply,¹⁰ but the later decisions adopt the common law rule,

⁹ *Pennsylvania*—Carson v. Blazer, 2 Binney 475, 4 Am. Dec. 463, Cooper v. Smith, 9 S. & R. 26, 11 Am. Dec. 658; Shrunk v. Schuylkill Nav. Co., 14 S. & R. 71; Hart v. Hill, 1 Whart. 124; Ball v. Slack, 2 Whart. 508, 30 Am. Dec. 278; Coovert v. O'Conner, 8 Watts 470; Bird v. Smith, 8 Watts 434, 34 Am. Dec. 483; Dalrymple v. Mead, 1 Grant's Cas. 197; Zimmerman v. Union Canal Co., 1 Watts & S. 346; Jones v. Janney, 8 Watts & S. 436, 443, 42 Am. Dec. 309; Bailey v. Miltenberger, 31 Pa. St. 37; Baker v. Lewis, 33 Pa. St. 301, 75 Am. Dec. 598; Flanigan v. Philadelphia, 42 Pa. St. 219; Monongahela Bridge Co. v. Kirks, 46 Pa. St. 112, 84 Am. Dec. 527; McKeen v. Delaware Canal Co., 49 Pa. St. 424; Tineum Fishing Co. v. Carter, 61 Pa. (11 P. F. Smith) 21, 100 Am. Dec. 597; Wainright v. McCullough, 63 Pa. St. 66; Zug v. Commonwealth, 70 Pa. St. 138; Poor v. McClure, 77 Pa. St. 214; Fisher v. Haldeman, 20 How. 186, 15 L. Ed. 879; Simpson v. Neill, 89 Pa. St. 183; Rundell v. Del. Canal Co., 1 Wall. Jr. 275, Fed. Cas. No. 12,139; Fulmer v. Williams, 122 Pa. St. 191, 10 Atl. Rep. 726, 1 L. R. A. 603, 9 Am. St. Rep. 88.

North Carolina—*Authorities conflicting*—Wilson v. Forbes, 2 Dev. 30; Ingraham v. Threadgill, 14 N. C. 3 Dev. 59; Collins v. Benbury, 25 N. C. (3 Ired. L.) 277, 38 Am. Dec. 722; Smith v. Ingram, 7 Ired. 175; Gil-

liam v. Bird, 30 N. C. 8 Ired. 280, 49 Am. Dec. 379; Fagan v. Armistead, 33 N. C. 433; Lewis v. Keeling, 46 N. C. 299, 62 Am. Dec. 169; State v. Dibble, 4 Jones 107; Ward v. Ellis, 6 Jones L. 183; State v. Glenn, 52 N. C. 7 J. L. 321; Cornelius v. Glenn, 52 N. C. 7 J. L. 512; Skinner v. Het-tick, 73 N. C. 53; State v. Pool, 74 N. C. 402, 407; State v. Tomlinson, 77 N. C. 528.

In *State v. Narrow Island Club*, 100 N. C. 477, 5 S. E. Rep. 411, 6 Am. St. Rep. 618, the Court said, in speaking of waters: "The public right arises only in case of their navigability; whether they are navigable or not, depends upon their capacity for substantial use, as indicated. They can be so used for the free passage of vessels; the public have only the right of navigation. The title of the bed of the river, lake, or sound in such case, and all special privileges and advantages incident thereto vest and remain in the owner thereof, subject only to the public easement."

Virginia—Norfolk City v. Cooke, 27 Gratt. 430; Mead v. Haynes, 3 Rand 33; Home v. Richards, 4 Call 441, 2 Am. Dec. 574; French v. Bankhead, 11 Grat. 136; Richards v. Home, 2 Wash. (Va.) 36; Martin v. Beverley, 5 Call. 444.

¹⁰ *Palmer v. Mulligan*, 3 Caines 307, 2 Am. Dec. 270; *People v. Platt*, 17 Johns. 195; *Hooker v. Cummings*, 20 Johns. 90, 11 Am. Dec. 249; *Canal*

even as to such rivers as the Hudson, with the exception of the Mohawk and the Niagara Rivers.¹¹ Also in South Carolina, the earlier cases held that the common law rule was inapplicable to the condition of the State,¹² but in the later cases the Courts hold that the rule does apply.¹³ The same may be said of Kentucky.¹⁴ In Mississippi, also, in the earlier cases, there was a conflict of opinion; but the later cases adhere to the common law rule.¹⁵

Appraisers v. People, 5 Wend. 423; *People v. Canal Appraisers*, 13 Wend. 355, 17 Wend. 571; *People v. Seymour*, 6 Cowan 579; *Ex parte Jenkins*, 6 Cowan 518, 16 Am. Dec. 447; *Arthur v. Case*, 1 Paige (N. Y.) 447; *Varick v. Smith*, 5 Paige 137, 9 Paige 547, 28 Am. Dec. 417; *Starr v. Child*, 20 Wend. 149, 5 Denio 599, 4 Hill 369; *Jackson v. Hilstead*, 5 Cowan (N. Y.) 216.

¹¹ *Chenango Bridge Co. v. Paige*, 83 N. Y. 178, 38 Am. Rep. 407; *Rev'g* 8 Hun 292, in which the Court held that a fresh water stream is the private property of the riparian owners, in which the public have an easement only for navigation and for floating logs and timber, a right of passage, and nothing more, as in a common highway, and the proprietor has a right to use the land and water of the stream in any way not inconsistent with the easement. *Pierpont v. Loveless*, 72 N. Y. 211, 4 Hun 696; *Mott v. Mott*, 68 N. Y. 246, 8 Hun 474; *Morgan v. King*, 35 N. Y. 454, 18 Barb. 277; 30 *Id.* 9; *Buffalo Pipe Line Co. v. N. Y. R. Co.*, 10 Abb. N. Cas. 107, 116, note. As to the Hudson, see *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Canal Appraisers v. People*, 17 Wend. 571; *People v. Canal Appraisers*, 33 N. Y. 461; *Crill v. Rome*, 47 How. P. 398; *People v. Gutches*, 48 Barb. 656; *Fort Plain Bridge Co. v. Smith*, 30 N. Y.

44; *Kingman v. Sparrow*, 12 Barb. 201.

¹² In *Cates v. Wadlington*, 1 McCord, 580, 10 Am. Dec. 699, it was held that a river merely capable of being navigable was private. In *Jackson v. Lewis, Cheves*, S. C. 259, the law is considered in doubt.

¹³ *McCullough v. Wall*, 4 Rich. 68, 86, 53 Am. Dec. 715; *Boatwright v. Bookman, Rice*, 447; *Noble v. Cunningham, McMull*, Ch. 280; *Jackson v. Lewis, Cheves*, 259; *State v. Hickson*, 5 Rich. 447; *State v. Columbia*, 27 S. C. 137, 146; *Shands v. Triplet*, 5 Rich. Eq. 76, 79.

¹⁴ As to early cases see *Louisville v. U. S. Bank*, 3 B. Mon. 138, 143; *Thurman v. Morrison*, 14 B. Mon. 367; *Morrison v. Thurman*, 17 B. Mon. 249, 66 Am. Dec. 153; *Hawesville v. Lander*, 71 Ky. 8 Bush. 679; *Trustees v. Wagon*, 1 A. K. Marsh. 243; *Cockrell v. McQuinn*, 4 T. B. Mon. 62; *Bruce v. Taylor*, 2 J. J. Marsh. 160; *Hart v. Rogers*, 9 B. Mon. 418, 422. Late cases: *Berry v. Snyder*, 3 Bush. 266, 274, 96 Am. Dec. 219; *Williamsburg Boom Co. v. Smith*, 84 Ky. 372; *Kentucky Lumber Co. v. Green*, 87 Ky. 257, 8 S. W. Rep. 439; *Louisville Bridge Co. v. Louisville*, 81 Ky. 189; *Miller v. Hepburn*, 8 Bush. 326.

¹⁵ *Magnolia v. Marshall*, 39 Miss. 109; *Morgan v. Reading*, 3 S. & M. 366; *Commissioners Homochitto River v. Withers*, 29 Miss. 21.

§ 330. **Title to beds—Public land States—State may adopt either rule.**—In 1845, in the case of *Pollard v. Hagan*,¹ the Supreme Court of the United States declared that the shores of all navigable waters, and the soil under them, were not granted by the Constitution to the United States, but were reserved to the States respectively; and that the new States have the same rights, sovereignty, and jurisdiction over this subject as the original States. The reason for this rule, as set forth by Mr. Justice McKinley, who rendered the opinion of the Court, was that to give to the United States the right to transfer to a citizen the title to the banks and the beds under navigable rivers, would be placing in their hands a weapon which might be wielded greatly to the injury of State sovereignty, and deprive the States of the power to exercise a numerous and important class of police powers. But in the hands of the States this power can never be used so as to affect the exercise of any national right of eminent domain or jurisdiction with which the United States has been invested by the Constitution. This case, although itself deciding as to the title to the soil under a tidal stream, has been construed to apply to all navigable streams. And, in harmony with the principles of that case, it has been decided that all such navigable waters and the land under them in the public domain of the United States within the Territories, while subject to be disposed of by Congress, under trust for the public use, were yet held by the United States to be transmitted to the new States to be formed, and which should, when endowed with statehood, possess them with the same rights and powers as the original States.² Hence, it is

¹ 43 U. S. 3 How. 212, 11 L. Ed. 565.

² That each State has the power to make such laws governing the waters flowing within its boundaries and their use, see Secs. 374, 593.

That the title to the soil under fresh water navigable waters is governed by the laws of the respective States, see the following cases: *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Pollard v. Kibbe*, 50 U. S. 9 How. 471, 13 L. Ed. 220; *Hallett v. Beebe*, 54 U. S. 13 How. 25,

14 L. Ed. 35; *U. S. v. Pacheco*, 69 U. S. 2 Wall. 587, 17 L. Ed. 865; *Smith v. Maryland*, 59 U. S. 18 How. 74, 15 L. Ed. 270; *Weber v. State Harbor Comrs.*, 85 U. S. 18 Wall. 57, 21 L. Ed. 798; *Barney v. Keokuk*, 94 U. S. 324, 24 L. Ed. 224; *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *St. Louis v. Myers*, 113 U. S. 566, 28 L. Ed. 1131, 5 Sup. Ct. Rep. 640; *Manchester v. Massachusetts*, 139 U. S. 240, 35 L. Ed. 159, 11 Sup. Ct. Rep. 559; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep.

left entirely to the respective States, formed out of these Territories, as to whether the navigable rivers and streams, together with the soil under them, within their respective jurisdictions, shall, in accordance with the principles of the common law, belong to the riparian owners;³ or, whether the common law shall be entirely abrogated in this respect by their constitutions, statutes, or by the construction of their Courts as to whether or not the common law is inapplicable to the conditions, needs, and necessities of the respective States; and in the latter case for the States to retain the title to the soil under these rivers in trust for the public, and with no right of alienation or disposition of such property by the State which does not recognize and is not in execution of the trust.⁴ And, as a necessary consequence of the ownership by the States, in trust,

210; *St. Louis v. Rutz*, 138 U. S. 226, 34 L. Ed. 941, 11 Sup. Ct. Rep. 337; *San Francisco v. Leroy*, 138 U. S. 656, 34 L. Ed. 1096, 11 Sup. Ct. Rep. 364; *Knight v. Land Assn.*, 142 U. S. 161, 35 L. Ed. 974, 12 Sup. Ct. Rep. 258; *Kaukauna Water Power Co. v. Green Bay & M. Canal Co.*, 142 U. S. 254, 35 L. Ed. 1004, 12 Sup. Ct. Rep. 173; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *Grand Rapids & I. R. Co. v. Butler*, 159 U. S. 87, 40 L. Ed. 85, 15 Sup. Ct. Rep. 991; *Mumford v. Wardell*, 73 U. S. 6 Wall. 423, 18 L. Ed. 756; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, reversing 16 Fed. Rep. 823; *Withers v. Buckley*, 61 U. S. 20 How. 84, 15 L. Ed. 816; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Gutierrez v. Albuquerque Land etc. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 New Mex. 177,

61 Pac. Rep. 357; *Huse v. Glover*, 119 U. S. 543, 30 L. Ed. 487, 7 Sup. Ct. Rep. 313; *Strader v. Graham*, 51 U. S. 10 How. 82, 13 L. Ed. 337; *The Montello*, 87 U. S. 20 Wall. 430, 22 L. Ed. 391; *Boquillas Cattle Co. v. Curtis*, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493; *Whitaker v. McBride*, 197 U. S. 510, 49 L. Ed. 857, 25 Sup. Ct. Rep. 530; *Weems etc. Co. v. People's etc. Co.*, 214 U. S. 345, 53 L. Ed. 1024, 29 Sup. Ct. Rep. 661; *Lowndes v. Huntington*, 153 U. S. 1, 38 L. Ed. 615, 14 Sup. Ct. Rep. 758; *Jackson v. Chew*, 25 U. S. 12 Wheat. 153, 6 L. Ed. 583; *McArthur v. Scott*, 113 U. S. 340, 28 L. Ed. 1015, 5 Sup. Ct. Rep. 652; *Kean v. Calumet Canal etc. Co.*, 190 U. S. 452, 47 L. Ed. 1134, 23 Sup. Ct. Rep. 651; *St. Anthony Falls Water Power Co. v. St. Paul Water Comrs.*, 168 U. S. 349, 42 L. Ed. 497, 18 Sup. Ct. Rep. 157; *Mobile Transp. Co. v. Mobile*, 128 Ala. 335, 30 So. Rep. 645, 64 L. R. A. 333, 86 Am. St. Rep. 143.

³ For title to the beds of streams under common law, see Secs. 328, 329.

⁴ *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

of all of the navigable waters and the land under them within their jurisdictions, it has been decided that rights in and incident to such navigable waters are to be determined solely with reference to the law of the State in which such navigable waters are situated.⁵ It is true that in the case of *St. Paul & Pac. R. Co. v. Schurmeir*,⁶ there is some *dictum* that "the better opinion is, that proprietors of lands bordering on navigable rivers, under titles derived from the United States, hold only to the stream, as the express provision is that all such rivers shall be deemed to be and remain public highways." But it will be noticed that in this case the Supreme Court of the United States simply affirmed the rule as established in the State of Minnesota, relative to this subject, and affirmed the decision of the Supreme Court of that State in the same case.⁷ As to the expression, "the better opinion," we will add that it could hardly be in the face of the cases cited in our notes, leaving this subject entirely to the respective public land States. As to the express provision that all such rivers shall be deemed to be and remain public highways, the Court referred to the Act of May 18, 1796, as re-enacted on March 3, 1803,⁸ which simply provides that: "All navigable rivers, within the territory occupied by the public lands, shall remain and be deemed public highways." What the case really decided was that on these streams the riparian proprietors had the right of access along their lands, and that their title extended *at least* to the water's edge. This we deem to be the correct rule, as it gives the owners all the incidents of riparian proprietorship to the use of the water, including river frontage, with right of access to and from the adjoining land, and also gives them the right of accretions, so that they are not separated from the edge of the water of the river.⁹ And, in

⁵ *Kean v. Calumet Canal & I. Co.*, 190 U. S. 452, 47 L. Ed. 1134, 23 Sup. Ct. Rep. 651.

See, also, cases above cited.

⁶ 74 U. S. 7 Wall. 272, 19 L. Ed. 74.

⁷ 8 Minn. 113, Gil. 88, 83 Am. Dec. 770.

⁸ 1 Stat. L. 468; 2 Stat. L. 235; 6 Fed. Stat. Ann. 1905, p. 787; Rev. Stat. of U. S., Sec. 2476.

⁹ See, also, *Yates v. Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210, in which the Court said: "In this case we accept the view of the Supreme Court of California in its opinion as *expressing the law* of that State, 'that the Sacramento River being navigable in fact, the title of the plaintiff extends no further than the edge of the

the face of the statute cited, this can be done without impairing the right of the public to the use of the streams for navigation purposes, and that, too, whether the riparian owner has title to the beds of these streams, or whether his title extends only to the water's edge.

§ 331. **Title to beds—Public land States—The rule in the States.**—Having seen in the preceding section¹ that it is left entirely with each State to adopt such a rule as to the ownership or title to the soil under fresh water navigable waters as it sees fit, in this section we will discuss what the public land States have done in that respect. Some of the public land States have adopted one rule of ownership of the beds of fresh water navigable streams, and some another. In adopting the common law rule without any qualification or modification, it is equivalent to declaring that the title of the beds of fresh water navigable streams is in the riparian owners.² However, the States may, by their constitutions, statutes, or even by the decisions of their Courts as to the applicability of the common law in this respect within the boundaries of the respective States, adopt any doctrine which they see fit.³ Many of the States of the arid region have entirely repudiated the doctrine of riparian rights; and, of course, as the right of ownership of the soil under a navigable stream is one of the riparian rights, this has gone with the rest. Other States, notably California, have repudiated the common law as to the ownership of the soil under these streams, but adhere to the common law doctrine as to their flow of water.⁴ In Alabama, by a compact between that State and the United States, when it was admitted to the Union,

stream'; citing *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674."

See, also, *Dutton v. Strong*, 1 Black 23, 66 U. S. 35, 17 L. Ed. 29; *Jones v. Soulard*, 65 U. S. 24 How. 41, 16 L. Ed. 604; *Sherlock v. Bainbridge*, 41 Ind. 35, 13 Am. Rep. 302; *Braxon v. Bressler*, 64 Ill. 488.

¹ See Sec. 330.

² See *Riparian Owners*, Secs. 476-482.

³ See as to the common law not ap-

plicable to the arid West, Secs. 588-594.

⁴ *Green v. Swift*, 47 Cal. 536; *Cardwell v. Sacramento Co.*, 79 Cal. 347, 21 Pac. Rep. 763; *Wright v. Seymour*, 69 Cal. 122, 10 Pac. Rep. 323; *Foss v. Johnstone*, 158 Cal. 119, 110 Pac. Rep. 294; *Messenger v. Kingsbury*, 158 Cal. 611, 112 Pac. Rep. 65.

See, also, Cal. Pol. Code, Secs. 2349, 2875; Cal. Civ. Code, Sec. 670; 1 *Kerr's Cyc. Codes*, pp. 545, 680; 2 *Kerr's Cyc. Codes*, p. 629.

the navigable rivers were dedicated to public use, so that they could not subsequently be placed in private ownership.⁵ In Arkansas it is held that a riparian owner on a fresh water navigable stream who derives his title from the Government takes to the high-water mark only, and not to the middle of the stream.⁶ In Florida, it was first held that the State was the owner of the beds of all navigable streams,⁷ but by the Act of the legislature of 1856, the State vested all title between the low-water mark and the channel of these streams in the riparian proprietors.⁸ In the State of Idaho, in the recent case of *Johnson v. Johnson*,⁹ the Supreme Court, by a legislative decision, and contrary to the great weight of authority, especially in the Western States, announced and adopted the doctrine that a riparian owner upon the streams of that State, both navigable and nonnavigable, takes title to the bed of the stream to the thread of the same, subject, however, to an easement for the use of the public.¹⁰ This places Idaho in

See, also, *United States v. Mission Rock Co.*, 189 U. S. 39, 47 L. Ed., 865, 23 Sup. Ct. Rep. 606.

Packer v. Bird, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210, affirming the rule laid down in the same case by the Supreme Court of California, 71 Cal. 134, 11 Pac. 873, and in *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. 674, that where, by the terms of a patent, land is bounded by a navigable river, the title extends no further than to the edge of the stream. See, also, *People v. Gold Run D. & M. Co.*, 66 Cal. 138, 56 Am. Rep. 80, 4 Pac. Rep. 1152.

See, also, *California*, Part 14.

⁵ *Mobile v. Eslava*, 9 Port. (Ala.) 597, affirmed 41 U. S. 16 Pet. 234, 10 L. Ed. 948, in which it was held that upon the admission of the State of Alabama it was provided that "all navigable waters within said State shall remain public highways, free to the citizens of said State, and of the United States, without any tax, impost, or toll therefor, imposed by the State."

See, also, *Hess v. Cheney*, 83 Ala. 251, 3 So. Rep. 791; *Magee v. Hallett*, 22 Ala. 699; *Pollard v. Kibbe*, 1 Ala. 403; *Bullock v. Wilson*, 2 Porter (Ala.), 436; *Kennedy v. Bebee*, 8 Ala. 909; *Hagan v. Campbell*, 8 Port. (Ala.) 9, 33 Am. Dec. 269; *Boulo v. New Orleans, M. & T. R. Co.*, 55 Ala. 480; *Stein v. Ashby*, 24 Ala. 521; *Essis v. Carey*, 20 Ala. 725; *Rhodes v. Otis*, 33 Ala. 578, 73 Am. Dec. 439; *Peters v. New Orleans R. Co.*, 56 Ala. 528; *Williams v. Glover*, 66 Ala. 189; *Walker v. Allen*, 72 Ala. 456; *Sullivan v. Spotswood*, 82 Ala. 163, 2 So. Rep. 716.

⁶ *St. Louis, I. M. & S. R. Co. v. Ramsey*, 53 Ark. 314, 13 S. W. Rep. 931, 8 L. R. A. 559, 22 Am. St. Rep. 195.

⁷ *Bucki v. Cone*, 25 Fla. 1, 6 So. Rep. 160; *State v. Black River Phosphate Co.*, 27 Fla. 276, 9 So. Rep. 205.

⁸ *Rivas v. Solary*, 18 Fla. 122.

⁹ 14 Idaho, 561, 95 Pac. Rep. 499, 24 L. R. A., N. S. 1240.

¹⁰ For the better rule, see dissenting opinion of Mr. Justice Sullivan in *Johnson v. Johnson*, *supra*.

the position of rejecting riparian rights as to the flow and use of the water of streams, but retaining the riparian right as to the ownership of the soil under the water of streams. In Iowa it is held that the test of navigability is the capacity of the streams, and that State holds the title to the beds of all navigable streams.¹¹ Kansas also adheres to the same doctrine.¹² The same may be said of the States of Minnesota,¹³ Missouri,¹⁴ Nebraska,¹⁵

See, also, *Lattig v. Scott*, 17 Idaho 506, 107 Pac. Rep. 47.

¹¹ *McManus v. Carmichael*, 3 Iowa 1; *Kraut v. Crawford*, 18 Iowa 549; 87 Am. Dec. 414; *Haight v. Keokuk*, 4 Iowa 199; *Grant v. Davenport*, 18 Iowa 179; *Tomlin v. Dubuque, B. & M. Co.*, 32 Iowa 106, 7 Am. Rep. 176; *Moffatt v. Brewer*, 2 G. Greene 348; *Musser v. Hershey*, 42 Iowa 356; *Houghton v. Chicago, D. & M. R. Co.*, 47 Iowa 370; *Renwick v. Davenport & N. W. R. Co.*, 49 Iowa 664, affirmed in 102 U. S. 180, 26 L. Ed. 51; *Barney v. Keokuk*, 94 U. S. 324, 24 L. Ed. 224; but see *Ingraham v. Chicago, D. & M. R. Co.*, 34 Iowa 249; *Brown v. Cunningham*, 82 Iowa 512, 48 N. W. Rep. 1042, 12 L. R. A. 583.

¹² *Woods v. Fowler*, 26 Kan. 682, 40 Am. Rep. 330, was an action by the owner of lands bordering on the Kansas River, to restrain certain parties from cutting and removing ice formed opposite his land. The stream had once been used for navigation, but had subsequently been declared nonnavigable by the legislature; and the Court, by Brewer, J., delivering the opinion, declared that "the act of the Legislature did not extend to the riparian owner's title to the thread of the river, and that the title to the soil being in the State, and the stream being a public highway, ownership of the ice would rest in the general public, or in the State, as the representative of the public."

See, also, *Kreger v. Fogarty*, 78 Kan. 541, 96 Pac. Rep. 845.

¹³ *Schurmeier v. St. Paul R. Co.*, 10 Minn. 82, 102, 88 Am. Dec. 59, 74 U. S. 7 Wall. 272, 19 L. Ed. 74. In the opinion of *Castner v. The Dr. Franklin*, 1 Minn. 73, the Court said: "The navigation of small streams has been embarrassed and impeded by individual ownerships and improvements. Lands bounded by navigable rivers have carried, as incidents to this circumstance, the exclusive right to the soil to the middle of the stream, and where they were united in the same person on both sides of the river, such person has exercised exclusive control of the entire channel adjacent."

See, also, *Union Dept. St. R. & Transf. Co. v. Brunswick*, 31 Minn. 297, 17 N. W. Rep. 626, 47 Am. Rep. 789; *Miller v. Mendenhall*, 43 Minn. 95, 44 N. W. Rep. 1141, 8 L. R. A. 89, 19 Am. St. Rep. 219.

See, also, *In re Minnetonka Lake Imp. Co.*, 56 Minn. 513, 58 N. W. Rep. 295, 45 Am. St. Rep. 494.

¹⁴ *Benson v. Morrow*, 61 Mo. 345; *Lamme v. Buse*, 70 Mo. 463; *Meyers v. St. Louis*, 8 Mo. App. 266, 82 Mo. 367; *Perkins v. Adams*, 132 Mo. 131, 33 S. W. Rep. 778; *Rees v. McDaniel*, 115 Mo. 145, 21 S. W. Rep. 913; *Hahn v. Dawson*, 134 Mo. 581, 36 S. W. Rep. 233; *Jones v. Soulard*, 65 U. S. 24 How. 41, 16 L. Ed. 604.

See, also, *Cooley v. Golden*, 117 Mo. 33, 23 S. W. Rep. 100, 21 L. R. A. 300.

¹⁵ *Kinkead v. Turgeon*, 74 Neb. 573, 104 N. W. Rep. 1061, 1 L. R. A.,

Nevada,¹⁶ Oregon,¹⁷ and Washington.¹⁸ In Tennessee it was first held that the soil was in the State, where the rivers were actually navigable.¹⁹ But it is now held that the title is in the riparian owners in all streams except those which are navigable for sea-going vessels, which is in the State.²⁰ In the following States the common law of riparian rights is rejected *in toto*: Arizona, Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming.²¹ As the ownership of the beds of fresh water streams navigable in fact is one of the riparian rights, it follows that this right was

N. S. 762, 109 N. W. Rep. 744, 7 L. R. A., N. S. 316, 13 Am. & Eng. Ann. Cas. 43, where the Court held that the title to the bed of a navigable river in Nebraska is in that State, and the rights of a riparian proprietor on such stream are bounded by the banks of the river. See, also, cases cited.

16 *Shoemaker v. Hatch*, 13 Nev. 261, where it was held that the water course, and not the meander line by which it is surveyed, is the boundary of a fractional subdivision of land.

17 *Minto v. Delancy*, 7 Ore. 377, where the Court held that where a navigable river was meandered in making the public survey, and the United States has granted land bounded by the meandered line, the grantee takes the river. The stream, and not the meander line, is the true boundary of the riparian owner. *Weis v. Oregon Iron Co.*, 13 Ore. 496, 11 Pac. Rep. 255; *Moor v. Willamette Transp. Co.*, 7 Ore. 355; *Johnson v. Knott*, 13 Ore. 308, 10 Pac. Rep. 418; *Parker v. West Coast Packing Co.*, 17 Ore. 510, 515, 21 Pac. Rep. 822, 5 L. R. A. 61; *Shaw v. Oswego Iron Co.*, 10 Ore. 371, 45 Am. Rep. 146; *Salem Imp. Co. v. McCourt*, 26 Ore. 93, 41 Pac. Rep. 1105; *State v. Portland etc. Co.*, 52 Ore. 502, 95 Pac. Rep. 722, 98 Pac. Rep. 160; *Coquille v. Johnson*, 52 Ore. 547, 98 Pac. Rep. 132, 132 Am. St. Rep. 716.

18 *Palmer v. Peterson*, 56 Wash. 74, 105 Pac. Rep. 179.

19 *Elder v. Burrus*, 6 Humph. 358, 367, in which Mr. Justice Thorley said: "Shall it be held that the interest of the community of England requires that their navigable streams should belong to the Crown as public property, but that in all the States bordering on the Mississippi and its mighty tributaries, these great and important highways, by which such an amount of merchandise of every kind and description is annually sent to market, shall belong to private individuals because the tide does not ebb and flow in them? Surely not, unless we are compelled by positive law to so maintain."

20 *Stuart v. Clark*, 2 Swan 9, 58 Am. Dec. 49; *Goodwin v. Thompson*, 15 Lea 209, 54 Am. Rep. 410; *Irwin v. Brown*, 12 S. W. Rep. 340; *Bowman v. Wathen*, 2 McLean 376, Fed. Cas. No. 1740; *Martin v. Nance*, 3 Head 649; *Holbert v. Edens*, 5 Lea 204, 40 Am. Rep. 26; *Posey v. Jones*, 7 Lea 102; *Sigler v. State*, 66 Tenn. 7 Baxt. 493; *Roberts v. Cunningham*, Mart. & Y. 67; *Sighs v. State*, 7 Baxter 493; *Memphis v. Overton*, 3 Yerger 387.

21 As to rejection of riparian rights, see Secs. 585-594, and authorities cited.

also rejected and the ownership of the beds of these streams is in the States under whose jurisdiction these waters flow. It will be noticed that these States are within the extreme arid portion of the United States, where the navigable rivers are few and as a general thing small. But, regardless of the rule adopted by the respective States as to the ownership of the soil under these waters, the public has the right of navigation of these streams and the other rights, which will be discussed hereafter.²²

§ 332. **Meandered bodies of water—Title between lines.**—There is another class of fresh water navigable streams which requires more than a passing notice here, and that is the class of streams of this nature which have been meandered by the Government. The meander lines were made under the authority of the Federal Government in the course of the survey of the public lands, when the same were being prepared for settlement, and consist of a surveyed line around lakes and other similar bodies of water, and also along the sides of rivers and other water courses when they were of such size that they could not be conveniently included in the measurement of the land by the regular survey in sections and townships and ranges. As far as the rights of the Government are concerned, when it meanders any body of water or a water course and sells the adjoining lands to settlers, and the water is navigable, the title to the bed or soil between the meandered lines vests in the State within which it lies, to be used by the State in trust for all of the people. These meander lines are supposed to follow the banks of the streams and are run to show the sinuosities of the streams, although often, through the carelessness of the Government surveyors, or even through fraud upon their part, they do not always follow the banks or the edge of the high water. At times, in fact, there is a considerable strip of land between the meandered line and the high-water line, and the question has often arisen as to whom this belongs, especially after the fractions of land down to the meandered line have been sold to *bona fide* settlers. Regardless of the cause of any discrepancy, with the sale of these lands within a State by the Government, down to the meander lines, all title of the Government passes, the land included within the fraction down to the meander line to the settler, and

²² For right of navigation, see Secs. 341-357.

the land between the meander line and the high-water line to the State. With the title passes away all authority or control of the executive department of the Government over the land on both sides of the meander line, and over the title which it has conveyed. As was said by the Supreme Court of the United States in the case of *Moore v. Robbins*,¹ "It would be as reasonable to hold that any private owner of land who has conveyed it to another can, of his own volition, cancel or annul the instrument which he has made and delivered," as to permit the Government to claim the land between the meander line and the high-water mark, after it has conveyed the land down to the meander line to a settler.² It then devolves upon the State to declare the rule of law as to the ownership both of the bed of the stream itself and the strip of land between the meander line and the high-water line. The title of the grantee will extend to the point allowed by the State laws, so that, in case the rule of the State is that his title extends to the thread of the stream, it will extend to that point.³ And again, when the rule of the State is that the title of the riparian owner stops with the high-water line and that the actual bed of the stream is in the State, the grantee of the Government takes only to that line.⁴ But whatever may be the rule of the State as to the ownership of the beds of the streams, it is well settled that meander lines are not intended as boundaries, but that either the thread or the high-water line of the body of water will be regarded as the true boundary.⁵

¹ 96 U. S. 530, 24 L. Ed. 848.

² See, also, *Mitchell v. Smale*, 140 U. S. 406, 35 L. Ed. 442, 11 Sup. Ct. Rep. 819; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, reversing 16 Fed. Rep. 823; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Murphy v. Kirwan*, 103 Fed. Rep. 104, 83 Fed. Rep. 275, 28 C. C. A. 348; *Richardson v. U. S.*, 100 Fed. Rep. 714; *Pollard v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup.

Ct. Rep. 210; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548.

³ *Hanson v. Rice*, 88 Minn. 273, 92 N. W. Rep. 982.

See, also, common law theory of riparian rights, Secs. 450-551.

⁴ For ownership of the beds of streams and other bodies of water, see Secs. 326-331.

⁵ *Jefferis v. East Omaha Land Co.*, 134 U. S. 178, 33 L. Ed. 872, 10 Sup. Ct. Rep. 518; *Mitchell v. Smale*, 140 U. S. 406, 35 L. Ed. 442, 11 Sup. Ct.

§ 333. **Ownership in the water—In general.**—There can be no absolute title to the *corpus* of the water of a stream or other body of water, either by the public, State, or individual, so long as it is flowing naturally.¹ As we have seen, there may be an absolute title to the bed and banks of a water course or other body of water,² but the water itself is never stationary; and, so long as it remains in its natural course, it can not be brought into the possession of any one, and hence it follows that there can be no absolute title to it. It is like the air—a naturally flowing substance, incapable of absolute ownership.³ Justinian says that the things common to mankind by the law of Nature, are the air, running water, the sea, and consequently the shores of the sea.⁴ However, a right may be acquired to the use of running water, or a certain amount of running water, which the law will regard and protect as property.⁵ Further than this the law will not, because it can not, go. As well might the law attempt to apportion a certain amount of the air in the atmosphere to one State, or to one individual, as to attempt to apportion a certain

Rep. 819; *St. Paul & P. R. Co. v. Schurmeir*, 74 U. S. 7 Wall. 272, 19 L. Ed. 74, 10 Minn. 82, 88 Am. Dec. 59.

¹ See *Riparian Rights*, Secs. 450-551.

See *Appropriation of Water*, Secs. 585-756.

See, also, Secs. 288, 289.

² See Secs. 325-332.

For rights of the riparian owners in the water, see Sec. 455.

³ *Apton v. Blundell*, 12 M. & W. 324, 13 L. J. Exch. N. S. 289; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571; *Hanson v. McCue*, 42 Cal. 303, 10 Am. Rep. 299; *Eddy v. Simpson*, 3 Cal. 249, 58 Am. Dec. 408; *McGuire v. Brown*, 106 Cal. 660, 670, 39 Pac. Rep. 1060, 30 L. R. A. 384; *McDonald v. Askew*, 29 Cal. 200, 1 Morr. Min. Rep. 660; *Stanislaus Water Co. v. Bachman*, 152 Cal. 716, 93 Pac. Rep. 858, 15 L. R. A., N. S. 359; *Los Angeles v. Baldwin*,

53 Cal. 469; *Dalton v. Bowker*, 8 Nev. 190; *Owen v. Field*, 102 Mass. 104; *Baltimore v. Appold*, 42 Md. 442; *Pixley v. Clark*, 35 N. Y. 520, 91 Am. Dec. 299; *Pollett v. Long*, 56 N. Y. 200, 58 Barb. 20; *Lancey v. Clifford*, 54 Me. 487, 92 Am. Dec. 561; *Taylor v. Fickas*, 64 Ind. 167, 31 Am. Rep. 114; *Bliss v. Kennedy*, 43 Ill. 67; *Druley v. Adam*, 102 Ill. 177; *Cooper v. Williams*, 4 Ohio 253, 22 Am. Dec. 745; *McCord v. High*, 24 Iowa 336; *Meyers v. St. Louis*, 8 Mo. App. 266, 82 Mo. 367; *Merritt v. Parker*, Cox 460, 1 N. J. L. 526; *Mayor v. Commissioners*, 7 Pa. St. 348; 2 Black. Com. 18; *Callis on Sewers*, 268.

See, also, Sec. 455, for rights of riparian owners in the water.

⁴ Justinian, *Inst.*, D. 1, T. 8, C. XLI, T. 1, Sec. 1.

⁵ *Kidd v. Laird*, 15 Cal. 162, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571.

That a water right is property, see Secs. 768-770.

amount of running water. Water, in its natural condition, is constantly moving. It flows by or through one man's property today, and by or through another's tomorrow. Today it is in one State and tomorrow it is in another. Yet we often hear or see the expression of ownership in running water; this is especially true in the Court decisions. There may be a right to use the water, but there can be no absolute ownership of its *corpus*. Neither sovereign nor subject can have any greater than a usufructuary right in running water.⁶

§ 334. **The right to the use of the water does not depend upon the ownership of the bed.**—The right of the State or the public, or of an individual, to use the waters of natural streams does not depend upon the title or ownership of the beds of the streams. At common law it depends upon the ownership of the *ripa* or bank by the riparian owner.¹ As we shall see when we come to the discussion of the Arid Region doctrine of appropriation, no ownership is required either in the bed of the stream or the bank in order to acquire a right to the use of the water. So, when we come to the use of the water of the natural streams, it makes no difference as to whether the title of the soil under the water is in the State or in the riparian owner, this use is governed by other rules of law.² The right of the individual, under the law of this country, is also subject to the rights of the public to navigate all waters which may be used for that purpose, and the other rights of the public, which we will discuss in this chapter.³ Where the State owns the bed, the right of the State to use the water is subject to the rights of the individual riparian owners. The only advantage which comes to the State by virtue of this ownership, is that the water, so far as it can be used within its bed, is subject to the common use of all citizens who can gain access to it. The State can not remove such waters from their courses nor pollute it to the extent that causes injury to the riparian owners whose lands

⁶ *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393.

¹ For riparian rights, see Secs. 450-551.

² For the Arid Region doctrine of appropriation, see Chap. 31, Secs. 585-594.

³ See Secs. 334-340. *Fulmer v. Williams*, 122 Pa. 191, 15 Atl. Rep. 726, 1 L. R. A. 603, 9 Am. St. Rep. 88; *Hudson River R. Co. v. Loeb*, 30 N. Y. Super. Ct. (7 Roberts) 418.

it flows by or across. The State can only use such quantities of the water for special purposes as can be used without affecting the character of the water body. All public bodies of water and the land covered by them, are held by the State within which or by which they flow in trust for all the people, who alike have the benefit thereof in navigation, fishing, boating, and the like.⁴ Hence the State has no such title to the water of a public stream that it can sell the exclusive right either to the water itself, or to the enjoyment of its use to one person. But the water must be left free for the common use of all the citizens as it was in a state of nature. The power of the State over public waters within its boundaries is limited to the enactment and enforcement of such reasonable police regulations as may be deemed necessary to preserve the common right of all.⁵ Hence it follows that the State may regulate the mode of navigation, and hunting and fishing, the time and manner of taking ice, the quantity of water which may be withdrawn from the common mass, and any other matters which the good of the public requires.⁶ The legislatures of the respective States may, for the good of the public, subordinate one public use to another, and declare the order of the uses for which the water may be used, if there is not water enough to satisfy all demands;⁷ this is also true in those States in the Western portion of this country where the law of appropriation prevails.⁸ The ownership of these bodies of

⁴ Fuller v. Shedd, 161 Ill. 462, 44 N. E. Rep. 286, 33 L. R. A. 146, 52 Am. St. Rep. 380; Lamprey v. State, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; Arnold v. Mundy, 6 N. J. L. 1, 10 Am. Dec. 356.

⁵ McLennen v. Prentice, 85 Wis. 427, 55 N. W. Rep. 764; Willow River Club v. Wade, 100 Wis. 86, 76 N. W. 273, 42 L. R. A. 305; Newark Aq. Bd. v. Passaic, 45 N. J. Eq. 393, 18 Atl. Rep. 106; Priewe v. Wisconsin St. Land & Imp. Co., 93 Wis. 534, 67 N. W. Rep. 918, 33 L. R. A. 645, 103 Wis. 537, 79 N. W. Rep. 780; Mendota Club v. Anderson, 101 Wis. 479, 78 N. W. Rep. 185; Pitkin v. Olmstead, 1 Root 217; Illinois Cent. R.

Co. v. Illinois, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; Rossmiller v. State, 114 Wis. 169, 89 N. W. Rep. 839, 58 L. R. A. 93, 91 Am. St. Rep. 910; Stockton v. Baltimore & N. Y. R. Co., 32 Fed. Rep. 9; Woodruff v. North Bloomfield Gravel Min. Co., 8 Sawy. 628, 16 Fed. Rep. 25, 9 Sawy. (U. S.) 441, 18 Fed. Rep. 753.

⁶ Smith v. Rochester, 92 N. Y. 463, 44 Am. Rep. 393.

⁷ Bailey v. Philadelphia, W. & B. R. Co., 4 Harr. (Del.) 389, 44 Am. Dec. 593; Mullen v. Penobscot Log-Driving Co., 90 Me. 555, 38 Atl. Rep. 557.

⁸ Order in which appropriations may be made, see Secs. 791-794.

public water being in the State, in trust for all of the people, it is the duty of the legislature to enact such laws as will best preserve its use for all persons, and for all purposes.⁹ As was held in a recent Iowa case,¹⁰ the public right which every inhabitant may exercise is not confined to any particular use of these waters, and therefore the Court held that the legislature may forbid the taking of ice from a stream the title to which is in the State, in favor of a public use for skating and other sports.¹¹ We will now discuss some of the uses which may be made of public or navigable waters, by the State or general public.

§ 335. Right of access to public waters—From the land side.—

One of the requisites of public waters is that there must be a right of access of the public to those waters. This is true whether the public claims the right to the waters for navigation,¹ fishing,² cutting ice,³ or any other use of the waters, in which the public claim to have rights. Hence a body of water, although navigable in itself, is not public if it lies wholly within the lands of an individual, or can not be reached by the public without trespassing upon private property.⁴ If an individual have land adjoining a body of public water, he may reasonably refuse permission to have the public in general, or any person go over it to approach the water unless there be a public way over it.⁵ In fact a statute attempting to give a

⁹ *Commonwealth v. Gilbert*, 160 Mass. 157, 35 N. E. Rep. 454, 22 L. R. A. 439; *Commonwealth v. Perley*, 130 Mass. 469; *Organ v. State*, 56 Ark. 267, 19 S. W. Rep. 840; *Bittenhaus v. Johnston*, 92 Wis. 588, 66 N. W. Rep. 805, 32 L. R. A. 380.

¹⁰ *Park Comrs. of Des Moines v. Diamond Ice Co.*, 130 Iowa 603, 105 N. W. Rep. 203, 3 L. R. A., N. S. 1103.

¹¹ See, also, *Cook v. Burlington*, 30 Iowa 94, 6 Am. Rep. 646; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

¹ Right of Access to Navigable Streams, see Sec. 344.

² See Secs. 358-368.

³ See Sec. 337.

⁴ *Bolsa Land Co. v. Burdick*, 151

Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275; *Turner v. Hebron*, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386.

For Access to Waters for Navigation, see Sec. 344; *Angell, Tidewaters*, Sec. 28; *White v. Whittier*, 2 Dane, Abr. 712; *Bickel v. Polk*, 5 Harr. (Del.) 325.

⁵ *Magnolia v. Marshall*, 39 Miss. 110; *Rowell v. Doyle*, 131 Mass. 474; *West Roxbury v. Stoddard*, 7 Allen 158; *Coolidge v. Williams*, 4 Mass. 140; *Paine v. Woods*, 108 Mass. 160; *Cortelyou v. Van Brundt*, 2 Johns. 357, 3 Am. Dec. 439; *Stetson v. Bangor*, 60 Me. 313; *Allen v. Jay*, 60 Me. 124, 12 Am. Law Reg., N. S. 497, 11 Am. Rep. 185; *Brastow v. Rockport*

right of way to cross private lands to reach public waters is unconstitutional, upon the ground of taking private property without compensation.⁶ And so, it was held by the Supreme Court of Massachusetts in the case of *Slater v. Gunn*,⁷ that the use for more than 100 years, of a well-known and well-defined roadway from a public road to a public body of water, by hunters, fishermen, picnic parties, and by whomsoever chose, without objection and without obstruction, does not establish a way by dedication, or prescription, where it does not appear that such use was not with the express or implied permission of the owners of the land. In fact, so strict is the law upon this subject and so careful is it to protect private rights, that there seems to be but one exception to this rule whereby the public may be justified in passing over the private lands of an individual, to reach public waters, and that is in the case of a wreck of a vessel in those waters; and that is based upon the necessity of the case, and upon the theory of the common law that the king was the owner of the wreck, and he has the right of way over any man's land to his wreck.⁸ Rights of way may be acquired over private lands by license, grant, prescription, or dedication; or highways may be laid out, and acquired by eminent domain, to afford access to the water by the public.⁹ In fact, the proper access to a public stream should be by a highway; the stream should be a continuation of the highway, to which the public have full rights. And, a public road laid out to a public body or stream of water becomes a public landing

Ice Co., 77 Me. 100; *Tyler v. Beacher*, 44 Vt. 648, 8 Am. Rep. 398; *New England Trout & Salmon Club v. Mather*, 68 Vt. 338, 35 Atl. Rep. 323, 33 L. R. A. 569; *Freedom v. Norris*, 128 Ind. 377, 27 N. E. Rep. 869; *Turner v. Hebron*, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386.

The Massachusetts colonial ordinance gave a right to any one to go to a great pond on foot through uninclosed lands, provided that he could not cross lands in crop. *Barrows v. McDermott*, 73 Me. 441.

⁶ *New England Trout & Salmon Club v. Mather*, 68 Vt. 338, 35 Atl. Rep. 323, 33 L. R. A. 569.

⁷ 170 Mass. 509, 49 N. E. Rep. 1017, 41 L. R. A. 268.

⁸ *Anonymous*, 6 Mod. 140; *Hetfield v. Baum*, 35 N. C. (13 Ired. L.) 394, 57 Am. Dec. 563.

⁹ *Parsons v. Clark*, 76 Me. 476.

If a highway is laid out to a river the owner of the soil can not by filling out in front of the street obstruct the public right of way to the river. *Newark Lime & C. Mfg. Co. v. Newark*, 15 N. J. Eq. 64; *People v. Lambier*, 5 Denio 9, 47 Am. Dec. 273; *Re Wells Ave.*, 22 N. Y. S. R. 648, 4 N. Y. Supp. 301; *Jersey City v. Morris Canal & Bkg. Co.*, 12 N. J. Eq. 545; *Hoboken Land & I. Co. v. Hoboken*, 36 N. J. L. 540.

at its termination, and piers constructed at the ends of such streets are mere extensions of the highways, the title to which is vested in the public.¹⁰

§ 336. **Right of access to public waters—Obstructions from the water side.**—The right of access to public waters is a property right and usually in the riparian owner;¹ and, therefore, it is held that the State itself can not make or authorize to be made any obstruction upon the water side of navigable waters, which will prevent the riparian owner from having free access from his land to the stream or from the stream to his land, unless it be done under the exercise of the power of eminent domain for a public use, and upon just compensation made therefor.² This is the rule adopted by the most of the States, and, as we believe, the correct one. This subject, however, comes properly under the subject of riparian rights and will be more thoroughly discussed in a subsequent portion of this work.³ It is held in an early case in California: "The State can not make or authorize to be made an obstruction in navigable waters in front of any proprietor, which will prevent his having free access by water to his land, unless it be done in the exercise of its power to take private property for such use and

¹⁰ North Hemstead Highway Comrs. v. Queens County, 17 Wend. 9; *Re* New York C. & H. R. Co., 77 N. Y. 248; *Dana v. Craddock*, 66 N. H. 593, 32 Atl. Rep. 757.

¹ For Riparian Rights, see Secs. 450-551.

² *Yates v. City of Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984, where it is held that a riparian proprietor, whose land is bounded by a navigable stream, has the right of access to the navigable part of the river and the right to make a landing, wharf, or pier for his own use or for the use of the public, of which the owner can not be deprived, except for a public use and upon just compensation.

See, also, *San Francisco Sav. Union v. R. G. R. Petroleum & Min. Co.*, 144

Cal. 134, 77 Pac. Rep. 823, 66 L. R. A. 242, 103 Am. St. Rep. 72, 1 Am. & Eng. Ann. Cas. 182; *Eldridge v. Cowell*, 4 Cal. 80; *Case v. Toftus*, 39 Fed. Rep. 730, 5 L. R. A. 684; *Sullivan Timber Co. v. City of Mobile*, 110 Fed. Rep. 187; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Shepard v. Coeur d'Alene Lumber Co.*, 16 Idaho 293, 101 Pac. Rep. 591; *Small v. Harrington*, 10 Idaho 499, 79 Pac. Rep. 461; *Kamm v. Norman*, 50 Ore. 9, 91 Pac. Rep. 448, 11 L. R. A., N. S. 290, 126 Am. St. Rep. 689; *State ex rel. Denny v. Bridges*, 19 Wash. 44, 52 Pac. Rep. 326, 40 L. R. A. 593, and note; *Mashburn v. St. Joe Imp. Co.*, 19 Idaho 30, 113 Pac. Rep. 92.

³ For riparian rights, right of access, see Sec. 540.

compensation made therefor.”⁴ The question as to whether compensation should be granted to a riparian owner, whose right of access is taken for the improvement of navigation, is left entirely to State law.⁵ In England it was held that no compensation need be given to riparian owners in the improvement of navigation, upon the ground that there could be no riparian rights in navigable streams.⁶

§ 337. **Right of the public to gather ice.**—The right of the public to gather ice from streams and other bodies of water, deemed public in their nature, is not co-ordinate with the right of the public to navigate those waters.¹ A stream may be public in so far as the right of the public to navigate the same, whether the State or a riparian owner owns the soil under the water, depending entirely whether the stream is in fact actually navigable.² The rule govern-

⁴ *Eldridge v. Cowell*, 4 Cal. 80. That the above proposition is the common and better rule, see, also, *Yates v. Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984; *San Francisco Savings Union v. R. G. R. Petroleum & Min. Co.*, 144 Cal. 134, 77 Pac. Rep. 822, 66 L. R. A. 242, 103 Am. St. Rep. 72, 1 Am. & Eng. Ann. Cas. 182.

See, also, *Denny v. Bridges*, 19 Wash. 44, 52 Pac. Rep. 326, 40 L. R. A. 593, and note; *Shepard v. Coeur d'Alene etc. Co.*, 16 Idaho 293, 100 Pac. Rep. 591; *Bigham Bros. v. Port Arthur etc. Co.*, 100 Tex. 192, 97 S. W. Rep. 686, 13 L. R. A., N. S. 656, reversing *Id.*, 91 S. W. Rep. 848; *Mashburn v. St. Joe Improvement Co.*, 19 Idaho 30; 113 Pac. Rep. 92; *Kamm v. Norman*, 50 Ore. 9, 91 Pac. Rep. 448, 11 L. R. A., N. S. 290, 126 Am. St. Rep. 698; *United States v. Mission Rock etc. Co.*, 189 U. S. 391, 47 L. Ed. 865, 23 Sup. Ct. Rep. 606.

That the New York decisions are opposed to the above view, see *Gould v. Hudson River R. Co.*, 6 N. Y. 552; *People v. Tibbets*, 19 N. Y. 523; *People ex rel. Loomis v. Canal Appraisers*,

33 N. Y. 461; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Sage v. New York*, 154 N. Y. 61, 47 N. E. Rep. 1096, 38 L. R. A. 606, 61 Am. St. Rep. 592; *Langdon v. New York*, 93 N. Y. 129.

⁵ See *United States v. Mission Rock etc. Co.*, 189 U. S. 391, 47 L. Ed. 865, 23 Sup. Ct. Rep. 606; *Barney v. Keokuk*, 94 U. S. 324, 24 L. Ed. 224; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, reversing 16 Fed. Rep. 823; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Shively v. Bowlby*, 152 U. S. 49, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548.

⁶ *The King v. Directors of Bristol Dock Co.*, 12 East 429, 104 Eng. Reprint 167.

See, also, *Crawford etc. Co. v. Hathaway*, 67 Neb. 329, 60 L. R. A. 889, 93 N. W. Rep. 781, 108 Am. St. Rep. 647; *Cohen v. United States*, 162 Fed. 364.

¹ See *Right of Navigation*, Chap. 16, Secs. 341-357.

² For streams actually navigable, see Secs. 343-346.

ing the gathering of ice is that the title to the ice is in the one owning the title to the soil under the water. If the soil belongs to the riparian owner he has the exclusive right to the ice; and, upon the other hand, when the ownership of the soil is in the State or public, the right to the ice is given to all who can gain access to it, without trespassing upon private lands.³ Although it is held that the State has no title to the ice which may accumulate on public waters, in the sense that it can go into the ice business and sell for its own emolument, and that the only title which it has is one in trust for all the people, it has such a right that it may regulate the taking of the ice by the people, the same as it may prescribe reasonable regulations governing other uses by the public of public waters.⁴ And hence it is held that it is within the power of the legislature of a State to substitute one public use for that of another, without its being an invasion of a right of property.⁵ A somewhat extreme case involving this principle was recently decided in Iowa, where it was held that the legislature could forbid the taking of ice

³ See, for right of access, Secs. 335, 336, 344.

See Appropriation of Water for Ice Ponds, Sec. 699.

See Riparian Owner's Right to Take Ice, Sec. 493; *Brown v. Cunningham*, 82 Iowa 512, 48 N. W. Rep. 1042, 12 L. R. A. 583; *Brastow v. Rockport Ice Co.*, 77 Me. 100; *Cummings v. Barrett*, 10 Cush. 186; *West Roxbury v. Stoddart*, 7 Allen 158; *Gage v. Steinkrauss*, 131 Mass. 222; *Barrows v. McDermott*, 73 Me. 441; *Rossmiller v. State*, 114 Wis. 169, 89 N. W. Rep. 839, 58 L. R. A. 93, 91 Am. St. Rep. 910; *Rowell v. Doyle*, 131 Mass. 474; *Wood v. Fowler*, 26 Kan. 682, 40 Am. Rep. 330; *Fay v. Salem & D. Aqueduct Co.*, 111 Mass. 27; *Hittinger v. Eames*, 121 Mass. 539; *Tudor v. Cambridge Waterworks*, 1 Allen 164; *Ham v. Salem*, 100 Mass. 350; *Commonwealth v. Vincent*, 108 Mass. 441; *People's Ice Co. v. Davenport*, 149 Mass. 322, 21 N. E. Rep. 385; *McFadden v.*

Haynes & D. Ice Co., 86 Me. 319, 29 Atl. Rep. 1068; *Woodman v. Pitman*, 79 Me. 456, 10 Atl. Rep. 321, 1 Am. St. Rep. 342; *Sanborn v. People's Ice Co.*, 82 Minn. 43, 84 N. W. Rep. 641, 51 L. R. A. 829, 83 Am. St. Rep. 401.

⁴ *Barrows v. McDermott*, 73 Me. 441; *Woodward v. Pitman*, 79 Me. 456, 10 Atl. Rep. 321, 1 Am. St. Rep. 342; *Rossmiller v. State*, 114 Wis. 169, 89 N. W. Rep. 839, 58 L. R. A. 93, 91 Am. St. Rep. 910; *Commonwealth v. Gilbert*, 160 Mass. 157, 35 N. E. Rep. 454, 22 L. R. A. 493; *Commonwealth v. Perley*, 130 Mass. 469; *Organ v. State*, 56 Ark. 267, 19 S. W. Rep. 840; *Bittenhouse v. Johnston*, 92 Wis. 588, 66 N. W. Rep. 805, 32 L. R. A. 380; *Cooley's Const. Lim.*, 6th Ed., p. 643.

⁵ *Cooley's Const. Lim.*, 6th Ed., p. 666; *McManus v. Carmichael*, 3 Iowa 1; *Cook v. Burlington*, 30 Iowa 94, 6 Am. Rep. 649; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

from a stream, the title to which was in the public, in favor of a public use for skating and other sports.⁶

§ 338. Right of a State to divert water for power purposes.—It is beyond the power of a State to appropriate to itself the riparian or other rights in waters for the sole purpose of creating a water power to be leased for manufacturing purposes, even under its right of eminent domain.¹ As said by the Supreme Court of the United States, "This would be a case of taking the property of one man for the benefit of another, which is not a constitutional exercise of the right of eminent domain."² However, we have seen that the State may take the water of streams to aid in navigation, and when so taken, should power be created as an incident to the improvement of the navigation, it need not be permitted to go to waste, but it may be sold or leased by the State.³

§ 339. Right of State to divert water from a stream for irrigation.—Under the common law, the State or public have no right to divert the waters of streams, or other bodies, for the purpose of irrigation. Water, as we shall see,¹ under certain circumstances, may be diverted from the streams and used for irrigation as a riparian right by individuals, but even this is straining the strict construction of the common law as it originated in England. One of the fundamental principles of the common law respecting water rights is, that the water must flow in the channel of the stream where it was wont to flow by Nature.² But, for the State or public, at common law, to divert the waters of a stream for the purpose of selling or leasing water for irrigating lands, no such thing is known at common law. However, in India, one of the British provinces, in

⁶ *Park Comrs. of Des Moines v. Diamond Ice Co.*, 130 Iowa 603, 105 N. W. Rep. 203, 3 L. R. A., N. S. 1103.

See, also, *Bailey v. Philadelphia, W. & B. R. Co.*, 4 Harr. (Del.) 389, 44 Am. Dec. 593; *Mullen v. Penobscot Log-Driving Co.*, 90 Me. 555, 38 Atl. Rep. 557.

¹ For eminent domain, see Secs. 1059-1098.

² *Kaukauna Water Power Co. v.*

Green Bay & Miss. Canal Co., 142 U. S. 254, 35 L. Ed. 1004, 12 Sup. Ct. Rep. 173; *Id.*, 90 Wis. 370, 61 N. W. Rep. 1121, 28 L. R. A. 443, 48 Am. St. Rep. 937.

³ See, also, *Water Rights for Power Purposes*, Secs. 695, 847-855.

¹ See *Irrigation as a Riparian Right*, Secs. 498-525.

² See *Riparian Rights*, Secs. 450-551.

this respect we find that the common law rule is entirely abrogated, and the State does it all; not only constructing all of the irrigation works, but by a system of leases for a term of years, collects the water rates.³ Again, as we will see, by constitutional or legislative enactments, in many of the Western States, all waters within the State are dedicated to the State or public.⁴ This gives the State the right, at least, of supervision and control of all waters within its jurisdiction. Again, we find that it is within the power of many of the States to construct irrigation works, and divert the water as a right to make internal improvements, and sell or lease the same to individuals. The Supreme Court of Colorado held that public reservoirs constructed by the State for the storage of water for irrigation and domestic purposes are "internal improvements" within the meaning of the Act of Congress, providing that five per cent of the proceeds of the sale of agricultural lands lying within the State of Colorado shall be paid to the State for the purpose of making such internal improvements, and that the fund could be used for the purpose of diverting water from natural streams for the purpose of irrigation.⁵ And the Supreme Court of Colorado again held,⁶ that a system of reservoirs and canals, authorized by statute for the purpose of storing and delivering water to all within reach thereof, for application to beneficial uses specified by the State constitution, is fairly embraced within the statutory phrase, "internal improvement." In fact, in some portions of the arid West, water is so scarce, and its careful husbanding for irrigation and other beneficial uses so important, that legislative action, wisely directed and properly guarded, may become the foundation of a domestic or internal improvement second to no other in its public importance. Hence it follows, that a State, under its general power of internal improvement, has the right to construct reservoirs and irrigation systems and to divert the waters of the natural streams into these systems for the use of the general public, the same as it has the power to construct roads, or to build bridges. It must be

³ For irrigation in India, see Chap. 5, Secs. 103-118.

⁴ See Dedication of Waters to a State, Chap. 18, Secs. 372-389.

⁵ *Re Internal Improvement Fund*, 12 Colo. 285, 21 Pac. Rep. 484.

As to the right of a State to con-

struct systems of canals and reservoirs, see, also *Re Canal Certificates*, 19 Colo. 63, 34 Pac. Rep. 274; *Re Internal Improvements*, 18 Colo. 317, 32 Pac. Rep. 611.

⁶ *Re Internal Imp. Fund*, 12 Colo. 285, 21 Pac. Rep. 438.

added, however, that in this, as in other cases, there must be no invasion of the rights of prior appropriators, or other rights which have vested in and to the waters of the streams from which the diversion is made.

§ 340. **Miscellaneous rights of the public.**—There are also a number of other rights which the public have in waters, and with which we have to deal. But as these will be discussed in separate chapters, a bare mention of them in this place will suffice. There is the right that the public have to navigation,¹ especially as that right has conflicted, or may conflict in the future, with the right of irrigation, or other appropriations of water for beneficial uses. There is the right that the general public have in the fishing and hunting in and on the public waters, and the exclusive rights that fishing and shooting clubs may acquire in public waters.² Also the police powers of a State to regulate the destruction of fish by irrigation ditches will be discussed.³ Then there is the dedication of the waters of a State by State constitutional or statutory provisions, and the effect of such a dedication.⁴ The right of the State, or public, to divert water for irrigation and other beneficial purposes will receive attention,⁵ as well as the right of cities and towns to acquire and protect water rights for municipal purposes.⁶ The right of cities and towns to use the natural streams for sewer outlets will be treated under the general subject of pollution of waters.⁷ It will be our endeavor in these discussions to keep as close to the main subject of the Western theory of appropriation of waters for beneficial purposes as possible. But, in order to trace the origin of this theory, or in order to draw comparisons between the Western theory of waters and those of the common or civil law, it will be necessary, at times, to discuss the subject from those standpoints.

¹ See Chap. 16, Secs. 341-357.

² See Chap. 17, Secs. 358-371.

³ See Sec. 371.

⁴ See Chap. 18, Secs. 372-389.

⁵ See Chap. 68.

⁶ See Chap. 71.

⁷ See Chap. 58, Secs. 1133, 1134.

CHAPTER 16.

THE RIGHT OF NAVIGATION.

- § 341. Scope of chapter.
- § 342. The public right of navigation—Early rules.
- § 343. The public right of navigation—Rule in the United States.
- § 344. Stream need not be navigable entire year—Access.
- § 345. For what purposes waters are navigable.
- § 346. Navigability, how determined.
- § 347. The right of navigation reserved by the Government.
- § 348. The navigable waters of the United States and of a State distinguished.
- § 349. Use of waters for navigation—A paramount right.
- § 350. Protection of Navigation—Bridge Acts of Congress of March 3, 1899, and March 23, 1906.
- § 351. Protection of navigation—The Dam Acts of Congress of March 3, 1899, June 21, 1906, and June 23, 1910.
- § 352. Protection of navigation by Congress—Prohibiting the obstruction of navigation—Construction of Acts.
- § 353. The destruction of the navigability of streams.
- § 354. Navigation as against irrigation.
- § 355. Navigation as against irrigation—Interference with tributaries.
- § 356. Right to use water from navigable streams for irrigation.
- § 357. Diversion of water in public streams for navigation.

§ 341. **Scope of chapter.**—It is not the purport of this work to go into the questions of navigation, or of maritime law, to any great extent; and, hence, except so far as to the questions of the right of the public to use all navigable waters in this country for that purpose, and the prohibition of the law against the placing of obstructions in navigable waters, and the destruction of water courses capable of being navigated, we will leave these subjects to others to discuss. Therefore, in this chapter we will discuss the right of the public to navigate the navigable waters of this country only so far as they relate to the main subject-matter of this work—irrigation and water rights—especially in this Western country.¹

§ 342. **The public right of navigation—Early rules.**—The right to navigate the navigable bodies of water of the earth has descended

¹ See, also, for the right of appropriation of the waters of navigable streams, Secs. 354-357, 663. For riparian rights in navigable waters, see Sec. 469.

to us from the very earliest times. This right not only included the waters of the sea, the great inland bodies of water such as lakes and inland seas, but also the rivers and water courses, which were capable of floating vessels and boats in the assistance of commerce and other purposes, and that, too, whether the soil under those waters was owned by the Crown, the State, or by private individuals. This right to the use of waters has been recognized by all nations, and from the earliest civilization. It is generally regarded as an inherent public right needing no legislative sanction. These waters of the earth have been counted in all ages and by all people as highways for all legitimate purposes of trade and transportation, and for use by all the people or the public in common. As was said in the French civil law, "Rivers, the banks of rivers, and highways are things public, the use of which is common to all persons, according to the respective laws of countries. And this kind of thing does not appertain to any particular persons."¹

By the law of ancient Rome, upon which the French law was based, we find that not only the rivers were declared public for navigation, but also the banks thereof, where the same could aid in the navigation of the rivers, and were declared as public as the rivers themselves, although the title to the banks might be in those who possessed the lands adjoining the rivers.² In the Pandects we also find the praetor's interdict, "Do nothing on the banks of a public river, or in the stream, neither put anything on the banks or in the stream, whereby the landing or the navigation is made worse."³ Coming down more nearly to our own times, we find that this public use of rivers and all navigable waters has been preserved. By the early common law of England, which law has formed the basis of our own laws, we find that only tidal waters were in law deemed navigable and public.⁴ The term "navigable" was used in a strictly legal sense, and was held to be synonymous with the word "tidal" when applied to waters.⁵ However, the tidal test

¹ The French Civil Law, Cushing's Ed., 1850, Vol. I, Sec. 150.

² Justinian, Inst. D. T. 8, C. XLI; T. 1, Sec. 4. See, also, Cooper's Ed. 1841, p. 68.

³ D. 43, 12, I. Also, Roman Water Law, Ware, Sec. 16.

⁴ See definitions of public and private waters, Secs. 290, 291, 296.

⁵ 3 Kent. Com. 13th Ed. 413, 414; Miles v. Rose, 1 Marsh. 313, 5 Taunt. 705, 1 Eng. C. L. Rep. 240; Royal Fisheries of the Banne, Davies Rep. 149; Ward v. Creswell, Willes Rep. 268; Warren v. Mathews, 6 Mod. 73; Carter v. Murcot, 4 Burr. 2162, 98 Eng. Rep. F. R. 127; Carson v. Blazer, 2 Bin. 475 (Pa.), 4 Am. Dec. 463;

of navigability was only a *prima facie* one at common law, tidal waters being held, in many instances, as nonnavigable;⁶ and, upon the other hand, although at common law no waters are deemed navigable above the ebb and flow of the tide,⁷ we find that in England itself, dating back to the very earliest reports, many rivers above the influence of the tide were declared to be navigable in fact and subject to the rights of the public for that purpose.⁸ It is said that

Illinois Cent. R. Co. v. Illinois, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 10. The Genesee Chief v. Fitzhugh, 53 U. S. 12 How. 443, 13 L. Ed. 1058, where the Court said that under the common law "tide water and navigable water are synonymous terms."

⁶ Woolrych on Waters, p. 411; Mayor of Lynn v. Turner, Cowper 86. In Miles v. Rose, *supra*, Mr. Chief Justice Gibbs said: "The flowing of the tide, though not absolutely inconsistent with the right of private property in the creek, is strong *prima facie* evidence of its being a public navigable river." See, also, Rex v. Montague, 4 B. & C. 598, in which Mr. Justice Bailey says: "The strength of this *prima facie* evidence must depend upon the situation and nature of the channel. If it is a broad and deep channel, calculated for the purpose of commerce, it would be but natural to conclude that it has been a public navigable one, but if it is a petty stream, navigable only at certain periods of the tide, and then only for a short time, and by very small boats, it is difficult to suppose that it ever has been a public navigable channel." See, also, McManus v. Carmichael, 3 Iowa 1.

Sullivan v. Spotswood, 82 Ala. 163, 2 So. Rep. 716; Simpson v. Seavey, 8 Me. 138, 22 Am. Dec. 228; Glover v. Powell, 10 N. J. Eq. 211; State v. Pacific Guano Co., 22 S. C. 50; Groton

v. Hurlbert, 22 Conn. 178; Burrows v. Gallup, 32 Conn. 493, 87 Am. Dec. 186.

⁷ The Royal Fishery of the Banne, Davies Rep. 149; Angell on Water Courses, 6th Ed., Sec. 542; Chicago v. McGinn, 51 Ill. 266, 2 Am. Rep. 295; Schultes, Aquatic Rights 133.

⁸ 19 Assize, p. 63, pl. 6; 22 Assize, p. 106, pl. 93; Hale, De Jure Maris, Chs. 1, 2; Williams v. Wilcox, 8 Ad. & El. 314, 3 Nev. & P. 606, 7 L. J. Q. B. N. S. 229, 1 W. W. & H. 477; Smith v. Andrews, 2 Ch. 678, 65 L. T. N. S. 175; Pierse v. Fanconberg, 1 Burr. 292; Grant v. Gordon, Mor. Dic. 12,822, cited in L. R. 2 App. Cas. 872.

In Blount v. Layard, 2 Ch. 681, a case decided in 1891, Bowen, J., in speaking of the navigability of the River Thames, said: "We are dealing with the Thames, which is not a tidal river at the place in question. But, on the other hand, it is a navigable river, that is, all of the queen's subjects have the right of passing and repassing on it, and it is what is called in the old books a 'King's stream,' by which is meant not that the soil must belong to the king, but that it is a *highway*, and that the king is the natural guardian and conservor of the commodious and convenient passage of the river by his subjects."

Leconfield v. Lonsdale, L. R. 5 C. P. 665, 39 L. J. C. P. 305, 23 L. T. N. S. 155, 18 Week. Rep. 1165; Hind v. Manfield, Noy 103; Hindson v. Ashby, 2 Ch. 1, 65 L. J. Ch. N. S.

the right to navigate waters above the reach of the tide was acquired by actual user and prescription.⁹ Hence it follows that in England no body of water is deemed *prima facie* navigable, where it was above the ebb and flow of the tide, but any such portion of a river which was in fact navigable, even above the influence of the tide, might be proven so with the burden of proof upon him who asserted that to be a fact. There has been a great deal of discussion among the law writers and in the court decisions as to just what bodies were deemed navigable at common law.¹⁰

Without going into that question to any great extent, but simply referring to the authorities, we will say that the present rule in England under the common law is practically the same as the rule in this country, that is to say: All tide waters in both countries are *prima facie* deemed to be navigable; and all waters in both countries, above the reach of the tide, which are proven to be actually navigable may be so declared and so used by the public for that purpose. The confusion of the authorities upon this subject was caused undoubtedly by the failure to distinguish between the streams which are actually navigable, and those in which the title is in the Crown or public, under the common law. As we have seen in a previous section, the title to the soil in the Crown was limited to those under waters subject to the influence of the tide, and the use of the water was public because he held the entire title in trust for the public.¹¹ But whatever may be the distinction it

515, 74 L. T. N. S. 327, 45 Week. Rep. 252, 60 J. P. 484; Ball v. Herbert, 3 T. R. 253.

⁹ In England prescription is considered to be the true foundation of the right of passage above tide waters. Woolrych on Waters, 2d Ed. 40.

See, also, Delaney v. Boston, 2 Har. (Del.) 489; Brubaker v. Paul, 7 Dana (Ky.) 428, 32 Am. Dec. 111; Ingram v. Police Jury, 20 La. Ann. 126; Berry v. Carle, 3 Me. 269; Binney's Case, 2 Bland Ch. (Md.) 124; Scott v. Wilson, 3 N. H. 321; State v. Gilman-ton, 14 N. H. 461, 478, 14 N. H. 476; Shaw v. Crawford, 10 Johns. 236; Canal Appraisers v. People, 5 Wend. 423, 444; Pearsall v. Post, 20 Wend.

111, 22 Wend. 425; Wheeler v. Spinola, 54 N. Y. 377; State v. Thompson, 2 Strob. (S. C.) 12, 47 Am. Dec. 588; Stump v. McNarry, 5 Humph. (Tenn.) 363, 42 Am. Dec. 437. But it has been held that user alone is not sufficient to establish the fact of dedication to the public. Munson v. Hungerford, 6 Barb. 265; Curtis v. Kessler, 14 Barb. 511.

¹⁰ See authorities cited in last two notes.

¹¹ See title to the soil at common law, Secs. 325-328.

See, also, Stuart v. Clark, 2 Swan 9, 58 Am. Dec. 49; Morgan v. King, 30 Barb. 9; Gerrish v. Proprietors of Union Wharf, 26 Me. 384, 46 Am.

does not affect the right of the public to a public easement for the purpose of navigation in the waters.¹²

§ 343. **The public right of navigation—Rule in the United States.**—Whatever may have been the fine distinctions as to the navigability or nonnavigability of waters under the common law, in this country they have all been abolished.¹ It has been settled by a long line of decisions that the navigable waters of the United States are those which are actually navigable in fact and which by themselves or by their connections with other waters, for a period long enough to be of commercial value, are of sufficient capacity to float water craft for the purposes of commerce, trade, transportation, or even pleasure, between this country and foreign countries, or between the States of this country, or between different points in the same State. And, if a body of water is actually navigable, for the purposes mentioned, it is public water, and the public have the right to use the same for navigation; for, as we have seen, in our definitions, the term “navigable waters” is synonymous with the term “public waters.”² As we have said, by the common law of

Dec. 568; *Murphy v. Ryan*, Ir. Rep. 2 C. L. 143, 16 Week. Rep. 678; *Cox v. State*, 3 Blackf. 193 (Ind.).

¹² *Re State Reservation*, 37 Hun 537; *People ex rel. Howell v. Jessup*, 28 App. Div. 524, 51 N. Y. Supp. 228; *Flanagan v. Philadelphia*, 42 Pa. 219.

¹ *Escanaba etc. Transp. Co. v. Chicago*, 107 U. S. 678, 27 L. Ed. 442, 2 Sup. Ct. Rep. 185, where the Court held that the common law rule of the navigability of waters, that they are subject to the ebb and flow of the tide, has long since been discarded. Vessels larger than any which existed in England when that test was established, now navigate rivers and inland lakes of this country for more than a thousand miles beyond the reach of any tide. That test only becomes important when considering the rights of riparian owners to the bed of the streams, as in some States it governs in that matter.

Schurmeier v. St. Paul & P. R. Co., 10 Minn. 82, 88 Am. Dec. 59; *aff'd* 74 U. S. 7 Wall. 272, 19 L. Ed. 74; *Queen v. Meyers*, 3 U. C. C. P. 318; *Moor v. Veazie*, 32 Me. 343, 52 Am. Dec. 655; *People ex rel. Loomis v. Canal Apprs.* 33 N. Y. 461; *Hooker v. Cummings*, 20 Johns. 90, 11 Am. Dec. 249.

The common law rule, making the ebb and flow of the tide the test of navigability is not now applicable in the United States. *Weise v. Smith*, 3 Ore. 446, 8 Am. Rep. 621; *Hodges v. Williams*, 95 N. C. 331; compare *Felger v. Robinson*, 3 Ore. 455; *The Daniel Ball*, 77 U. S. 557, 19 L. Ed. 999; *The Montello*, 11 Wall. 411, 20 L. Ed. 191; *Chicago v. McGinn*, 51 Ill. 272; *McManus v. Carmichael*, 3 Iowa 1; *Bucki v. Cone*, 25 Fla. 1, 6 So. Rep. 160.

² See Sec. 290; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct.

England the test of navigability of a body of water was the ebb and flow of the tide, but that rule never prevailed in this country because it was inapplicable to our conditions. Here some of our streams are navigable by the largest vessels used in commerce, in some instances for more than a thousand miles above the flow of the tide. The great rivers are the arteries, and the smaller streams the veins or feeders of our internal system of navigation. In England, where the common law rule originated, the streams above the flow of the tide are few in number and capable of floating only the smaller vessels as they are constructed today. And, as we shall see in a subsequent portion of this work, in adopting the common law, we in this country adopted only that portion

Rep. 210; *Rhea v. Newport etc. R. Co.*, 50 Fed. Rep. 16; *The Genesee Chief v. Fitzhugh*, 53 U. S. 12 How. 443, 13 L. Ed. 1058; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *The Montello*, 87 U. S. 20 Wall. 430, 22 L. Ed. 391, where the Court held that those rivers must be regarded as public navigable rivers in law which are navigable in fact; *Miller v. Mayor etc. of N. Y.*, 109 U. S. 385, 27 L. Ed. 971, 3 Sup. Ct. Rep. 228; *Bucki v. Cone*, 25 Fla. 1, 6 So. Rep. 160.

Waters of a river navigable in fact, although the bed is owned by a riparian owner, are public waters of the State. *Willow River Club v. Wade*, 100 Wis. 86, 76 N. W. Rep. 273, 42 L. R. A. 305, and note; *Little Rock M. R. & T. R. Co. v. Brooks*, 39 Ark. 403, 43 Am. Rep. 277; *People ex rel. Canal Apprs. v. Loomis*, 33 N. Y. 461; *Browne v. Scofield*, 8 Barb. 239; *Ingram v. Police Jury*, 20 La. Ann. 226; *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209.

The distinguishing test between those rivers which are entirely private property and those which are private property subject to the public use and enjoyment consists in whether they are susceptible or not of use as

a common passage for the public. *People v. Platt*, 17 Johns. 195, 8 Am. Dec. 382; *Carter v. Thurston*, 58 N. H. 104, 42 Am. Rep. 584; *Wood v. Fowler*, 26 Kan. 682, 40 Am. Rep. 330; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Ten Eyck v. Warwick*, 75 Hun 562, 27 N. Y. Supp. 536; *Walker v. Allen*, 72 Ala. 456; *Lewis v. Coffee County*, 77 Ala. 190, 54 Am. Rep. 55; *Moor v. Veazie*, 32 Me. 343, 52 Am. Dec. 655; *State v. Narrows Island Club*, 100 N. C. 477, 5 S. E. Rep. 411, 6 Am. St. Rep. 618; *Hickok v. Hine*, 23 Ohio St. 523, 13 Am. Rep. 255.

If a stream is capable in its natural condition of being profitably used for any kind of navigation, its use to that extent is subjected to the general rules of law relating to navigation. *Weise v. Smith*, 3 Ore. 445, 8 Am. Rep. 621; *Wood v. Fowler*, 26 Kan. 382, 40 Am. Rep. 330; *St. Louis etc. R. Co. v. Ramsey*, 53 Ark. 314, 13 S. W. Rep. 931, 8 L. R. A. 559, 22 Am. St. Rep. 195, where it was held that actual navigability is in law the test of a navigable stream; *American River Water Co. v. Amsden*, 6 Cal. 443; *Gaston v. Mace*, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848.

which was applicable to our system of government and the physical conditions of our country.³ In fact, in this country, relative to the public use of our inland waters, we have more closely followed the Roman civil law than the common law. By the civil law all waters in which the flow was perennial were *publici juris*, or belonged to the public, and were navigable by the public, if they were capable of being navigated in the common sense meaning of that term. In some States the doctrine of the civil law in this respect has been carried to its utmost limit, and the rule to be deduced from its authorities, and in our opinion the better rule, is, that all streams are deemed navigable which are capable in their natural state and in their ordinary volume of water of transporting to market the products of the fields, forests, and mines.⁴

In other words, to meet the test of navigability as understood in the American law, a water course or other body of water should be susceptible of being used for purposes of commerce, or possess a capacity for valuable floatage in the transportation to the market of the products of the country through which it flows. It should be of practical usefulness to the public as a public highway in its natural state and without the aid of artificial means. A theoret-

³ For the common law not applicable to our conditions, in certain cases, see Secs. 585-594.

⁴ *Ten Eyck v. Warwick*, 75 Hun 572, 27 N. Y. Supp. 536; *Monongahela Bridge Co. v. Kirk*, 46 Pa. 112, 84 Am. Dec. 527; *Flanagan v. Philadelphia*, 42 Pa. 219; *Gaston v. Mace*, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848; *Goodwill v. Police Jury*, 38 La. Ann. 752; *Commonwealth v. Vincent*, 108 Mass. 441; *Commonwealth v. Chapin*, 5 Pick. 199, 16 Am. Dec. 386; *Rowe v. Granite Bridge Co.*, 21 Pick. 344; *Murdock v. Stickney*, 62 Mass. (8 Cush.) 113; *Attorney Gen. v. Woods*, 108 Mass. 436, 11 Am. Rep. 380; *Waters v. Lilly*, 4 Pick. 145, 16 Am. Dec. 333; *Genesee Chief v. Fitzhugh*, 53 U. S. 12 How. 443, 13 L. Ed. 1058; *The Daniel Ball v. U. S.*, 77 U. S., 10 Wall.

557, 19 L. Ed. 999; *McManus v. Carmichael*, 3 Iowa 1; *Woolrych on Waters*, p. 40; see, also *Justinian, Inst. Lib. 2, T. 1; Digest, Lib. 43, T. 12, 13, 14; Domat, Civil Law, Bk. I, Tit. 3, Arts. 1, 2; Code Napoleon, Bk. 2, Tit. 2, c. 2, Arts. 556, 560-563; Bk. 2, Tit. 2, c. 3; Ordinances of Louis XIV, S. 3, Art. 5.*

See, also, *Kregar v. Fogarty*, 78 Kan. 541, 96 Pac. Rep. 845, where it was held that the fact that a Government surveyor had meandered the banks of a river was evidence that the river was navigable, but not conclusive of that fact.

See, also, *Niles v. Cedar Point Club*, 175 U. S. 300, 44 L. Ed. 171, 20 Sup. Ct. Rep. 124; *State ex rel. Pealer v. Superior Court*, 58 Wash. 565, 109 Pac. Rep. 340.

ical or potential navigability, or one that is temporary, precarious, and unprofitable, is not sufficient. While the navigable condition of a water course need not be continuous, yet it should continue long enough to be useful and valuable in transportation; if nonnavigable a portion of the year, the fluctuations should come regularly with the seasons, so that the period of navigability may be depended upon. Mere depth of water in certain portions, or without the connection with other navigable waters, without profitable utility, will not render a water course navigable in the legal sense so as to submit it to public servitude; nor will the fact that it is sufficient in certain limited localities for pleasure boating or to enable hunters and fishermen to float their skiffs or canoes, although these uses may be included. To be navigable, a water course must have a useful capacity as a public highway for transportation.⁵

§ 344. **Stream need not be navigable entire year—Access.**—But, upon the other hand, in order to be navigable the stream or other body of water need not be actually navigable all of the year; however, for a considerable portion of the year it must be capable of navigation. It is a well-known fact that many of the larger streams of this and other countries, at certain periods of the year, or at certain periods during certain years, become so dry that they are incapable of being navigated to any extent. But there must be sufficiently regular and continued periods of navigable capacity to make the streams of commercial or other importance; and, when they are in this condition the public have the right to use them for that purpose.¹ But all streams or other bodies of

⁵ *Harrison v. Fite*, 148 Fed. Rep. 781, 78 C. C. A. 447; *Kregar v. Fogarty*, 78 Kan. 541, 96 Pac. Rep. 845; *Toledo Liberal Shooting Co. v. Erie Shooting Club*, 90 Fed. Rep. 680, 33 C. C. A. 233, 62 U. S. App. 644; *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209; *Morgan v. King*, 35 N. Y. 454, 91 Am. Dec. 58; *Brown v. Chadborne*, 31 Me. 9, 1 Am. Rep. 641; *Griffith v. Holman*, 23 Wash. 347, 63 Pac. Rep. 239, 54 L. R. A. 178; *Wethersfield v. Humphrey*, 20 Conn.

218; *Rowe v. Granite Bridge* (21 Pick.), 38 Mass. 344; *Gaston v. Mace*, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848; *Neadershouser v. State*, 28 Ind. 257; *Rhodes v. Otis*, 33 Ala. 578, 73 Am. Dec. 439; *Trullinger v. Howe*, 53 Ore. 219, 97 Pac. Rep. 549, 99 Pac. Rep. 880, 22 L. R. A., N. S. 545.

¹ *State ex rel. United Tanners Timber Co. v. Superior Court*, 60 Wash. 193, 110 Pac. Rep. 1017; *Kalama etc. Co. v. Kalama Driving Co.*, 48 Wash.

water, which have the requisite volume of water only occasionally as the result of freshets and for brief periods, are not navigable, so as to give the public rights therein for that purpose.² In order to be a public body of water it must be accessible to the public, and have a terminus by which the public can enter it and another from which they can leave it. Hence, creeks which open in navigable waters, but merely lead into private lands, are not public navigable waters.³ But a stream to be public need not necessarily be a highway leading from one county to another.⁴

612, 94 Pac. Rep. 469, 22 L. R. A., N. S. 641, 125 Am. St. Rep. 948; State *ex rel.* Wilson v. Superior Court, 47 Wash. 397, 92 Pac. Rep. 269; Monroe Mill Co. v. Menzel, 35 Wash. 487, 77 Pac. Rep. 813, 70 L. R. A. 272, 102 Am. St. Rep. 905; Morgan v. King, 35 N. Y. 454, 91 Am. Dec. 58; Gaston v. Mace, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848; Hot Springs etc. Co. v. Rivercomb, 106 Va. 176, 55 S. E. Rep. 580, 9 L. R. A., N. S. 894; Olson v. Merrill, 42 Wis. 203; Little Rock M. R. & T. R. Co. v. Brooks, 39 Ark. 403, 43 Am. Rep. 277; Colchester v. Brook, 7 Q. B. 339, 15 L. J. Q. B., N. S. 59, 9 Jur. 1090.

Watkins v. Dorris, 24 Wash. 636, 64 Pac. Rep. 840, 54 L. R. A. 199, where the Court held that a stream 100 feet wide and three feet deep, which, during annually recurring freshets, for a period of 25 years, has been profitably used for floating logs to market, is a public highway for that purpose, the Court distinguishing between the use for floating logs, and for general commercial purposes, and holding that the title to the soil was in the land owner, but subject to the right of the public to use the stream for the purpose of floating logs and timber.

See, also, East Hoquiam Boom & Log Co. v. Neeson, 20 Wash. 142, 54 Pac. Rep. 1001; Lownsdale v.

Gray's Harbor Boom Co., 36 Wash. 198, 8 Pac. Rep. 904; Smith v. Fonda, 64 Miss. 551, 1 So. Rep. 757; Holden v. Robinson Mfg. Co., 65 Me. 215; Olive v. State, 86 Ala. 88, 4 L. R. A. 33; Harold v. Jones, 86 Ala. 274, 5 So. Rep. 438, 3 L. R. A. 406; Felger v. Robinson, 3 Ore. 455; Sigler v. State, 7 Baxt. 493; Hallock v. Suitor, 37 Ore. 9, 60 Pac. Rep. 384; De Camp v. Thompson, 16 App. Div. 528, 44 N. Y. Supp. 1014; Lewis v. Coffee Co., 77 Ala. 190, 54 Am. Rep. 55; Thunder Bay Boom Co. v. Spechley, 31 Mich. 336, 18 Am. Rep. 184.

The mere fact that logs, poles, and rafts are floated down a stream occasionally, and in times of high water, does not make it a navigable river. U. S. v. Rio Grande Dam etc. Co., 174 U. S. 707, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

2 Morrison Bros. v. Coleman, 87 Ala. 655, 6 So. Rep. 374, 5 L. R. A. 384; Hubbard v. Bell, 54 Ill. 110, 5 Am. Rep. 98; Boykin v. Shaffer, 13 La. Ann. 129; Hains v. Welch, 14 Ore. 319, 12 Pac. Rep. 502; People *ex rel.* Ricks Water Co. v. Elk River Mill & Lum. Co., 107 Cal. 221, 40 Pac. Rep. 531, 48 Am. St. Rep. 125; Cardwell v. Sacramento Co., 79 Cal. 347, 21 Pac. Rep. 763.

3 See, also, for right of public to access to public waters, Secs. 335, 336.

For right of riparian owner to

§ 345. For what purposes waters are navigable.—As we have said, following the civil law, the rule in this country is, that all waters which are actually navigable in fact are navigable in law, and may be used by the public for that purpose.¹ In this connection just what constitutes the test of navigability becomes important, when considering the rights of the public, the rights of riparian owners, and also the rights of the claimants to the waters of the streams or other bodies of water. In our definition we have stated that waters, in order to be navigable by the public, must have the capacity to float water craft for the purposes of commerce, trade, transportation, or even pleasure.² This right of the public includes not only such waters which have the capacity for the sailing of vessels or boats, but also includes all smaller streams, which are merely floatable for rafts or logs, without being bound into rafts.³ In the Western States, therefore, where the floating

access, see Sec. 540; *Chisolm v. Caines*, 67 Fed. Rep. 285; *State v. Duncan*, 1 McCord, L. 404; *Hodges v. Williams*, 95 N. C. 331, 59 Am. Rep. 242; *Manigault v. Ward*, 123 Fed. Rep. 707.

But see *Den ex rel. dem. Murry v. Sermin*, 8 N. C. (1 Hawks) 56; *Heyward v. Farmers' Min. Co.*, 42 S. C. 138, 19 S. E. Rep. 963, 20 E. Rep. 64, 28 L. R. A. 42, 46 Am. St. Rep. 702.

Where the public could only gain access through an irrigating ditch to a navigable body of water which was entirely closed by plaintiff's land, it was held that it was not a public navigable body of water, and that the plaintiff was entitled to an injunction against parties attempting to navigate the water. *Bolsa Land Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275.

⁴ *Commonwealth v. Charlestown*, 1 Pick. 180, 11 Am. Dec. 161.

¹ See previous Sec. 344.

² See Sec. 343.

³ *Dedrick v. Wood*, 15 Pa. 9; *Stuart v. Clark*, 2 Swan 9, 58 Am. Dec. 49; *Carlson v. St. Louis Dam and*

Improv. Co., 73 Minn. 128, 75 N. W. Rep. 1044, 41 L. R. A. 371, and note, 72 Am. St. Rep. 610.

The true test in determining the right of the public in the use of a stream is whether or not inherently and in its nature it is capable of being used for floatage. If it is an easement in favor of the public it exists whether it has been used by the public or not. *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209; *Ames v. Port Huron Log Driving & Boom Co.*, 11 Mich. 139, 83 Am. Dec. 731; *Falls Mfg. Co. v. Oconto etc. Co.*, 87 Wis. 134, 58 N. W. Rep. 257; *Felger v. Robinson*, 3 Ore. 455; *Weise v. Smith*, 3 Ore. 446, 8 Am. Rep. 621; *Carter v. Thurston*, 58 N. H. 104, 42 Am. Rep. 584; see, also, *Gerrish v. Brown*, 51 Me. 256, 81 Am. Dec. 569; *Whisler v. Wilkinson*, 22 Wis. 572; *Sellers v. Union Lum. Co.*, 39 Wis. 525; *Cohn v. Wausau Boom Co.*, 47 Wis. 314, 2 N. W. Rep. 546; *Palmer v. Mulligan*, 3 Caines R. 308, 2 Am. Dec. 270; *Shaw v. Oswego Iron Co.*, 10 Ore. 371, 45 Am. Rep. 146; *Willow River Co. v. Wade*, 100 Wis. 86, 76 N. W. Rep.

of logs to market is a common industry, the right of such floatage is protected both by the statutes of the respective States and by the decisions of the Courts.⁴ All waters which are capable of floating the products of the country to a market are public highways, and are navigable within the rule subjecting navigable streams to public use.⁵ Nor is it necessary that the purposes of navigation of a stream be confined to those of trade or commerce, but, it is held, that one of the purposes for which it may be used is that of pleasure. Navigability for pleasure is as sacred in the eyes of the law as navigability for any other purpose.⁶ However, in our opinion, it is better to count the use for pleasure as but one of the purposes for which a stream may be deemed as navigable. It must be of considerable

273, 42 L. R. A. 305, and note; *Brown v. Chadbourne*, 31 Me. 9, 50 Am. Dec. 641, where the Court held that when a stream is inherently and in its natural state capable of being used for the floating of vessels, boats, rafts, or logs, the public easement exists.

But it is held that would be going too far to extend the doctrine to streams which have the capacity to float only single logs. *American River Water Co. v. Amsden*, 6 Cal. 443; *Sellers v. Union Lum. Co.*, 39 Wis. 525; *Weatherby v. Meiklejohn*, 56 Wis. 73, 13 N. W. Rep. 697.

⁴ *Kamm v. Norman*, 50 Ore. 9, 91 Pac. Rep. 448, 11 L. R. A., N. S. 290, 126 Am. St. Rep. 698; *Potlatch etc. Co. v. Peterson*, 12 Idaho 769, 88 Pac. Rep. 426, 118 Am. St. Rep. 233; *State ex rel. United Tanners etc. Co. v. Superior Court*, 60 Wash. 193, 110 Pac. Rep. 1017; *Flinn v. Vaughn*, 55 Ore. 372, 106 Pac. Rep. 642.

See, also, *Injunctions Against Logging*, Chap. 81; *Damages from Logging*, Chap. 83.

⁵ *Whisler v. Wilkinson*, 22 Wis. 572; *Goodwill v. Police Jury*, 38 La. Ann. 752; *Olson v. Merrill*, 42 Wis. 203; *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209; *Ames v. Port Huron Log Driving & Boom Co.*, 11 Mich. 139,

83 Am. Dec. 731; *Keator Lum. Co. v. St. Croix Boom Corp.*, 72 Wis. 62, 38 N. W. Rep. 529, 7 Am. St. Rep. 837; *Watkins v. 'Doris'*, 24 Wash. 636, 64 Pac. Rep. 840, 54 L. R. A. 199; *Shaw v. Oswego Iron Co.*, 10 Ore. 371, 45 Am. Rep. 146.

⁶ *Grand Rapids v. Powers*, 89 Mich. 94, 50 N. W. Rep. 661, 14 L. R. A. 498, 28 Am. St. Rep. 276; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541, where it was held that as population increases and towns and cities are built up in their vicinity, these waters will be still more used by the people for sailing, rowing, fishing, fowling, bathing, skating, taking water for domestic, agricultural, and even city purposes, cutting ice, and other public purposes which can not now be enumerated or even anticipated; and that to hand these waters over to private ownership, under any old or narrow test of navigability, would be a great wrong upon the public for all time, the extent of which can not, perhaps, be now even anticipated.

See, also, *Attorney Gen. v. Woods*, 108 Mass. 436, 11 Am. Rep. 380; *Browne v. Scofield*, 8 Barb. 239; *Gould on Waters*, 3d Ed. 112.

size in order to be navigable for this purpose;⁷ and, if it has a sufficient capacity for this purpose, it should be of a capacity for other purposes.⁸ To be navigable, so as to entitle the public to the free use of the same, a body of water must be capable of navigation in its natural state, without the necessity of any improvement or artificial aid by man. A stream which can only be made navigable or floatable by artificial means is not a public highway.⁹

§ 346. *Navigability, how determined.*—The courts will take judicial knowledge that certain waters are navigable and that others are not, where these matters are of general knowledge and within the limits of their jurisdiction.¹ In fact, upon this as upon

⁷ *Burroughs v. Whitwam*, 59 Mich. 279, 26 N. W. Rep. 491.

A stream 40 feet wide and four feet deep at high water, lasting about three months of the year, and at other times from six inches to two feet deep, and which has never been used for purposes of navigation, except by rowboats to a limited extent for pleasure, is not a navigable stream. *Griffith v. Holman*, 23 Wash. 347, 63 Pac. Rep. 239, 54 L. R. A. 178.

⁸ See *Bolsa Land Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275.

⁹ *East Hoquiam Boom & Log Co. v. Neeson*, 20 Wash. 142, 54 Pac. Rep. 1001; *De Camp v. Thompson*, 16 App. Div. 528, 44 N. Y. Supp. 1014; *Nutter v. Gallagher*, 19 Ore. 375, 24 Pac. Rep. 250; *Wadsworth v. Smith*, 11 Me. 278, 26 Am. Dec. 525; *Haines v. Hall*, 17 Ore. 165, 20 Pac. Rep. 831, 3 L. R. A. 609; *Smith v. Carlow*, 114 Mich. 67, 72 N. W. Rep. 22; *Rowe v. Granite Bridge Corp.*, 21 Pick. 344; *Bourke v. Davis*, L. R. 44 Ch. Div. 110, 62 L. T. N. S. 34, 38 Week. Rep. 167; *Burroughs v. Whitwam*, 59 Mich. 279, 26 N. W. Rep. 491; *State v. Baum*, 128 N. C. 600, 38 S. E. Rep. 900; *Weatherfield v. Humphrey*, 20 Conn. 218;

Burke County v. Catawba Lum. Co., 116 N. C. 731, 21 S. E. Rep. 941, 47 Am. St. Rep. 829; *American River W. Co. v. Amsden*, 6 Cal. 443; *Banks v. Frazier*, 111 Ky. 909, 23 Ky. L. Rep. 1197, 64 S. W. Rep. 983; *U. S. v. Rio Grande Dam & Irr. Co.*, 9 N. M. 303, 51 Pac. Rep. 674; *Id.*, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428; *Hubbard v. Bell*, 54 Ill. 110, 5 Am. Rep. 98; *Weise v. Smith*, 3 Ore. 446, 8 Am. Rep. 621; *Ten Eyck v. Warwick*, 75 Hun 562, 27 N. Y. Supp. 536; *Grand Rapids Boom Co. v. Jarvis*, 30 Mich. 308; *Whelan v. McLachlan*, 16 U. C. C. P. 102; *Boale v. Dickson*, 13 U. C. C. P. 337; *Ward v. Warner*, 8 Mich. 508; *Ligare v. Chicago M. & N. R. Co.*, 166 Ill. 249, 46 N. E. Rep. 803.

¹ For what are navigable streams, see Secs. 343, 345; *U. S. v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770, rev'g *Id.*, 9 N. M. 303, 51 Pac. Rep. 674; *Id.*, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428; *Hensler v. Hartman*, 16 Abb. N. C. 176, note; *Clark v. Cambridge A. Irr. & Imp. Co.*, 45 Neb. 798, 64 N. W. Rep. 239; *The Appollon*, 22 U. S. 9 Wheat. 362, 6 L. Ed. 111; *Peyroux v. Howard*,

other subjects, the Court will usually take notice of whatever ought generally to be known within the limits of their jurisdiction.² But the Courts will not take judicial knowledge at what particular point on a stream between its mouth and its source navigability ceases. Such a matter is one requiring evidence and to be determined by proof.³ Where the navigability of a stream is disputed it resolves itself into a question of fact for the jury to decide,⁴ even though the tide ebbs and flows at the point in question.⁵ If, however, the facts are found by the jury, the question as to whether the stream is navigable is then for the Court to decide as a matter of law.⁶ In the proof of a case involving the navigability of a certain fresh body of water not already held to be navigable, the burden is upon the one asserting that the stream is navigable.⁷ However, the rule is otherwise as to tidal waters, as all tidal waters are deemed *prima facie* navigable, and the burden of proof is upon the one alleging that they are not navigable.⁸ Also, where a Court has found that a certain body of water is navigable, until that decision is overruled the question is considered settled; and, as between the original parties, is *res judicata*.⁹ There

32 U. S. 7 Pet. 324, 8 L. Ed. 700; *The Montello*, 78 U. S. 11 Wall. 411, 20 L. Ed. 191; *Wood v. Fowler*, 26 Kan. 682, 40 Am. Rep. 330.

² *Greenleaf on Ev.*, Secs. 4, 5, and 6; *Brown v. Piper*, 91 U. S. 37, 23 L. Ed. 200; *King v. Haddock*, Andrews, 137; *New England Trout & Salmon Club v. Mather*, 68 Vt. 338, 35 Atl. Rep. 323, 33 L. R. A. 569.

³ *U. S. v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 2d Appeal, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428.

⁴ *Southern R. Co. v. Ferguson*, 105 Tenn. 552, 59 S. W. Rep. 343, 80 Am. St. Rep. 908; *Treat v. Lord*, 42 Me. 552, 66 Am. Dec. 298; *Sherman v. Sherman*, 18 R. I. 504, 30 Atl. Rep. 459.

⁵ *Jones v. Johnson*, 6 Tex. Civ. App. 262, 25 S. W. Rep. 650.

⁶ *Morgan v. King*, 30 Barb. 9.

⁷ *Griffith v. Holman*, 23 Wash. 347, 63 Pac. Rep. 239, 54 L. R. A. 178, 83 Am. St. Rep. 821; *Olive v. State*, 86 Ala. 88, 5 So. Rep. 653, 4 L. R. A. 33; *Walker v. Allen*, 72 Ala. 456; *Alabama Sipsey River Nav. Co. v. Georgia P. R. Co.*, 87 Ala. 154, 6 So. Rep. 73; *Morrison v. Coleman*, 87 Ala. 655, 6 So. Rep. 374, 5 L. R. A. 384; *Gaston v. Mace*, 33 W. Va. 14, 10 S. E. Rep. 60, 5 L. R. A. 392, 25 Am. St. Rep. 848; *Rhodes v. Otis*, 33 Ala. 578, 73 Am. Dec. 439; *Gwaltney v. Scottish Car. Tim. Co.*, 111 N. C. 547, 16 S. E. Rep. 692.

⁸ *Sullivan v. Spotswood*, 82 Ala. 163, 2 So. Rep. 716; *Jones v. Johnson*, 6 Tex. Civ. App. 262, 25 S. W. Rep. 650.

⁹ *Sherman v. Sherman*, 18 R. I. 507, 30 Atl. Rep. 459.

are a great many streams and other bodies of water which, upon the facts, have been decided to be navigable, and which are unnecessary to enumerate here. Many of these waters are held to be public navigable waters of the United States,¹⁰ and others are held to be public navigable waters of a State.¹¹

Many of the streams of the country have also been declared navigable by the legislatures of many States. As we have also seen, Congress, in the ordinance for the government of the Northwest Territory, provided that certain streams should be and remain public highways.¹² In some States statutes provide that all streams which have been meandered and returned as navigable by the surveyors of the United States Government should be deemed navigable.¹³ The land law of Texas of 1837, Sec. 42 (Hart. Deg. Art. 1878), enacts that all streams of the average width of 30 feet shall be considered navigable, within the meaning of the Act, as far as they retain the average width.¹⁴ The effect of these statutes declaring a stream navigable is peculiar. Where the streams are in fact actually navigable, they are simply declaratory, and give no additional rights which were not possessed before their enactment.¹⁵ But in jurisdictions where there is such a statute the Courts hold that whether or not a river is navigable is a question of fact, that in no manner depends upon whether or not the legislature had declared the river navigable.¹⁶

¹⁰ For public waters of the United States, see Secs. 348-353.

¹¹ For public waters of a State, see Sec. 348.

¹² See Sec. 347; *Caster v. The Dr. Franklin*, 1 Minn. 73; *State v. Wabash Paper Co.*, 21 Ind. App. 167, 48 N. E. Rep. 653, 51 N. E. Rep. 949.

¹³ *Jones v. Pettibone*, 2 Wis. 308; *Wisconsin River Imp. Co. v. Lyons*, 30 Wis. 61.

¹⁴ *Horton v. Pace*, 9 Tex. 81.

See, also, *Selman v. Wolfe*, 27 Tex. 68.

¹⁵ *Little Rock, M. R. & T. R. Co. v. Brooks*, 39 Ark. 403, 43 Am. Rep. 277; *Depew v. Wabash & E. Canal*, 5 Ind. 8.

¹⁶ *Martin v. Bliss*, 5 Blackf. 35, 32 Am. Dec. 52; *Murray v. Preston*, 106

Ky. 561, 50 S. W. Rep. 1095, 90 Am. St. Rep. 232; *Oakland v. Oakland Water Front Co.*, 118 Cal. 160, 50 Pac. Rep. 277; *Jones v. Pettibone*, 2 Wis. 308; *Olive v. State*, 86 Ala. 88, 5 So. Rep. 653, 4 L. R. A. 33, where the Court held that a statute declaring a river to be a public highway, can not have the effect to make it a public highway, unless it is navigable in point of fact, without making compensation to riparian owners, damaged by the use of the stream for navigation.

See, also, *Angell on Water Courses*, Sec. 541; *Morgan v. King*, 35 N. Y. 454, 91 Am. Dec. 58; *Walker v. Board of Public Works*, 16 Ohio 540; *Moor v. Veazie*, 32 Me. 343, 52 Am. Dec. 655, 31 Me. 360.

In fact, under the law of eminent domain, the legislature of a State has not the right, without making compensation, to destroy the property of individuals situated upon a water course, in making it navigable, when it is not so by nature; or in appropriating such a water course to a public use by artificial erections and improvements.¹⁷ For, as was said in the case of *Hutton v. Webb*,¹⁸ a navigable water course is not created by legislation, and it can not be abolished by legislation; and it was held that the rights of the riparian owners can not be destroyed without just compensation.

The definition of a navigable stream given by the Supreme Court of Oregon in *Felger v. Robinson*,¹⁹ and approved in and reaffirmed in *Hallock v. Sutor*,²⁰ and adopted in a very recent decision of Idaho in *Northern R. Co. v. Post Falls Lumber and Mfg. Co.*,²¹ is a correct definition, and is in harmony with the general trend of the decisions of the country dealing with navigable and floatable streams. This definition is as follows: "We hold the law to be that any stream in this State is navigable on whose waters logs or timbers can be floated to market, and that they are public highways for that purpose, and that it is not necessary that they be navigable the whole year for that purpose to constitute them such. If, at high water, they can be used for floating timber, then they are navigable; and the question of their navigability is a question of fact, to be determined, as any other question of fact, by a jury. Any stream in which logs will go by the force of the water is navigable."²²

In the case of *Duluth Lum. Co. v. St. Louis Boom & Imp. Co.*, 5 McCrary 382, 17 Fed. Rep. 419, it was held that a statutory declaration does not make a stream a navigable water of the United States unless it is so in fact.

¹⁷ See cases *supra*; *State v. Pool*, 74 N. C. 402; see, also, 75 N. C. 597; *Binney's Case*, 2 Bland Ch. 158; *Allison v. Davidson* (Tenn. Ch. App.), 39 S. W. Rep. 905; *Spring v. Russell*, 7 Me. (Greenl.) 273; *Monongahela Nav. Co. v. Coon*, 6 Pa. St. 383, 47 Am. Dec. 474; *Coover v. O'Connor*, 8 Watt (Pa.) 470; *Partridge v. Eaton*, 63 N. Y. 482.

18 124 N. C. 749, 33 S. E. Rep. 169, 126 N. C. 897, 36 S. E. Rep. 341, 59 L. B. A. 33.

19 3 Ore. 455.

20 37 Ore. 9, 60 Pac. Rep. 384.

21 — Idaho —, 119 Pac. Rep. 1098.

22 See, also, to the same general effect, the cases as follows: *Powell v. Springston Lumber Co.*, 12 Idaho 723, 88 Pac. Rep. 97; *Potlatch Lumber Co. v. Peterson*, 12 Idaho 769, 88 Pac. Rep. 426, 118 Am. St. Rep. 233; *La Veine v. Stack-Gibbs Lumber Co.*, 17 Idaho 51, 104 Pac. Rep. 666, 134 Am. St. Rep. 253; *Mashburn v. St. Joe Improvement Co.*, 19 Idaho 30, 113 Pac. Rep. 92.

§ 347. **The right of navigation reserved by the Government.**—During the formative period of this Government the founders were very careful to reserve all of the waters of the country which could be used for highways by navigation for that purpose. In 1787, in the ordinance for the government of the territory of the United States northwest of the Ohio River, it was provided: “The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways, and forever free, as well to the inhabitants of the said territory as to the citizens of the United States, and those of any other States that may be admitted into the Confederacy, without any tax, impost, or duty therefor.”¹ After the adoption of the Constitution of the United States by the Act of May 18, 1796,² re-enacted by the Act of March 3, 1803,³ it was provided that: “All navigable rivers, within the territory occupied by the public lands, shall remain and be deemed public highways.” This later Act having been in force from almost the first after the organization of our Government, it in effect reserves the use of all these navigable waters for navigation by the public from all grants to riparian owners upon these waters, and that, too, whether the soil under these waters was deemed to be in the riparian owners or in the State, according to the rule adopted within the respective jurisdictions.⁴

§ 348. **The navigable waters of the United States and of a State distinguished.**—But there are two classes of public navigable waters—the navigable waters of the United States, and the navigable waters of a State. The navigable waters of the United States, within the meaning of the various Acts of Congress relating thereto, and over which Congress has full and complete jurisdiction, may be defined as those waters which form, in their ordinary condition

See, also, *Moore v. Sanborne and Brown v. Chadbourne*, *supra*, and *Com'rs of Burke County v. Catawba Lumber Co.*, 116 N. C. 731, 21 S. E. Rep. 941, 47 Am. St. Rep. 829.

¹ See Ordinance of 1787, for government of Northwest Territory, Art. IV, 8 Fed. Stat. Ann., 1905, p. 22; 1 U. S. Comp. Stat., 1901, p. lxi.

26 Fed. Stat. Ann., 1905, p. 787; 2 U. S. Comp. Stat., 1901, p. 1567; 1 Stat. L. 468, U. S. Rev. Stat., 1878, Sec. 2476.

³ *Id.*, 2 Stat. L. 235.

⁴ See for ownership of soil under navigable waters, Secs. 328-332.

by themselves or by uniting with other waters, a continued highway over which commerce is or may be carried on with other States or foreign countries in the customary modes in which such commerce is conducted by water.¹ In contradistinction from the navigable waters of the United States, the navigable waters of a State are those waters which do not form such a highway for commerce with other States or foreign countries, in themselves or by their connection with other waters, and are only navigable between different places within the same State, and over which the State has full and complete jurisdiction.²

A body of water wholly within the boundaries of a single State, or one which is navigable only within a State, and one which can not be visited by vessels coming from or going to, by continuous voyages, navigable waters of other States, is not a navigable body of the United States, and is not within the jurisdiction of Congress.³ Wherever in its course the stream ceases to be navigable

¹ 20 Op. Atty. Gen. 101; *The Daniel Ball v. U. S.*, 77 U. S. 10 Wall. 557, 19 L. Ed. 999; *U. S. v. Burlington & H. C. Ferry Co.*, 21 Fed. Rep. 331; *U. S. v. The Montello*, 78 U. S. 11 Wall. 411, 20 L. Ed. 191; same case on another appeal, 87 U. S. 20 Wall. 430, 22 L. Ed. 391; *Cardwell v. American River Bridge Co.*, 113 U. S. 205, 28 L. Ed. 959, 5 Sup. Ct. Rep. 423.

For the purpose of founding admiralty jurisdiction a canal may be held to be navigable water of the United States, if it comes within the definition of such water. *Ex parte Boyer*, 109 U. S. 629, 27 L. Ed. 1056, 3 Sup. Ct. Rep. 434; *Perry v. Haines* (The Robert W. Parsons), 191 U. S. 17, 48 L. Ed. 73, 24 Sup. Ct. Rep. 8.

See, also, *Miller v. New York*, 109 U. S. 385, 27 L. Ed. 971, 3 Sup. Ct. Rep. 228; *U. S. v. Moline*, 82 Fed. 592; *Wallamet Iron Bridge Co. v. Hatch*, 9 Sawy. 643, 19 Fed. Rep. 347; *Newport & C. Bridge Co. v. U. S.*, 105 U. S. 470, 26 L. Ed. 1143; *Escanaba & L. M. Transp. Co. v. Chicago*, 107 U. S. 678, 27 L. Ed. 442,

2 Sup. Ct. Rep. 185; *St. Joseph Co. v. Pidge*, 5 Ind. 13; *Lawton v. Comr.*, 40 Fed. Rep. 480, 7 L. R. A. 55; *Hazel Kirk*, 23 Blatchf. 292, 25 Fed. Rep. 601.

² *U. S. v. The Montello*, 78 U. S. 11 Wall. 411, 20 L. Ed. 191, where it was held that the Acts of Congress, providing for the enrollment and license of vessels only apply to the vessels employed upon the navigable waters of the United States, and that Congress has not provided any regulations governing commerce between different places within a State, except so far as it is conducted in vessels on the navigable waters of the United States.

See, also, *Manigault v. Ward*, 123 Fed. 707; *Leovy v. U. S.*, 177 U. S. 621, 44 L. Ed. 914, 20 Sup. Ct. Rep. 797; *Hodges v. Williams*, 95 N. C. 331, 59 Am. Rep. 242.

³ *Depew v. Wabash & E. Canal*, 5 Ind. 8; *Neaderhouser v. State*, 28 Ind. 257; *Moor v. Veazie*, 32 Me. 343, 52 Am. Dec. 655; *Kilbourn Mfg. Co.*, 1 Abb. (U. S.) 158, 1 Biss. 546, Fed.

for commerce between States its national character as public waters of the United States terminates, and above that point it is within the exclusive jurisdiction of the State within which the stream flows.⁴ However, as we have seen, whether these waters are regarded as the navigable waters of the United States or those of the State within which they are found, if they are navigable in fact, or are susceptible of being used, in their ordinary condition, as highways of commerce, over which trade or travel is or may be conducted in the customary modes of trade or travel on water, they must be regarded as public navigable waters in law.⁵ And the jurisdiction of the general Government over interstate commerce and its natural highways vests in the Government the right to take all needed measures to preserve the navigability of all navigable waters of the country, even against any State action.⁶

§ 349. Use of waters for navigation—A paramount right.—We now come to the discussion of the relative rights, under the laws of this country as they now stand, of the public to use the waters of the navigable streams and other bodies of water for navigation, as compared with the uses of the same waters for other great industrial enterprises, especially where these uses tend to interfere with or destroy the natural navigation of the waters.

Our conclusions upon this subject are, that where the waters in question are public waters of the United States, as the same are defined in a previous section,¹ that the right of the public to navigate such bodies of water is paramount and superior to all other rights to use such waters; and, where such other uses tend to injure or destroy the navigation of bodies of water naturally navigable, such uses must give way to the rights of navigation. But, where the waters are strictly public navigable waters of a State, the rela-

Cas. 17,978; *Hodges v. Williams*, 95 N. C. 331, 59 Am. Rep. 242; *Peters v. New Orleans, M. & C. R. Co.*, 56 Ala. 528; *Groton v. Hurlburt*, 22 Conn. 178.

⁴ *Neaderhouser v. State*, 28 Ind. 257; *Egan v. Hart*, 45 La. Ann. 1358, 14 So. Rep. 244; *Hamilton v. Vicksburg, S. & P. R. Co.*, 34 La. Ann. 970, 44 Am. Rep. 451; *Ingraham v. Chicago, D. & M. R. Co.*, 34 Iowa 249.

⁵ As to what waters are actually

navigable and public, see Secs. 343-346; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Rhea v. Newport etc. R. Co.*, 50 Fed. Rep. 16.

⁶ *U. S. v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428.

¹ See Sec. 343.

tive right of navigation with other uses depends upon the laws of that State. However, where the streams and bodies of water are tributary to the navigable waters of the United States, and their use above would tend to injure or destroy the navigation of the rivers below, then, in that case, the uses above must give way to the rights of navigation. And, as there are very few streams in the interior portion of this country which are not directly or indirectly tributary to the navigable waters of the United States, this is a most important question that is liable to arise in the future, and will be discussed separately in another section.² As we have noticed, in a previous section, from the very formation of this Government, its founders, and afterward Congress, have jealously guarded these navigable waters as highways for the use of all of the people, and in which every one has an equal right. The Act passed on the 18th of May, 1796, providing that all the navigable rivers within the territory occupied by the public lands shall remain and be deemed public highways, is still in full force and effect.³ And, as all of the States which go to make up the arid region of this country were formed out of public lands of the United States, with the possible exception of Texas, it follows that the navigable waters of the United States within these States must remain and be deemed public highways.⁴

² See Sec. 355.

³ See 6 Fed. Stat. Ann., 1905, p. 787; 2 U. S. Comp. Stat., 1901, p. 1567; 1 Stat. L. 468; Rev. Stat. of U. S., 1878, Sec. 2476.

⁴ This is true of all the States which go to make up the arid region in which there are navigable rivers. The State owns the soil under them, and the riparian owner's boundaries are limited by the banks, and such streams have all the general characteristics of public navigable waters. *Packer v. Bird*, 71 Cal. 131, 11 Pac. Rep. 873, aff'd 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *People v. Gold Run etc. Co.*, 66 Cal. 138, 4 Pac. Rep. 1152, 56 Am. St. Rep. 80; *Shoemaker v. Hatch*, 37—Vol. I—Kin. on Irr.

13 Nev. 261; *Minto v. DeLancy*, 7 Ore. 337; *Moore v. Willamette Transp. Co.*, 7 Ore. 308; *Johnson v. Knott*, 13 Ore. 308, 10 Pac. Rep. 418; *Parker v. West Coast Packing Co.*, 17 Ore. 510, 21 Pac. Rep. 822, 5 L. R. A. 61; *Wood v. Fowler*, 26 Kan. 682, 40 Am. Rep. 330; *Haight v. Keokuk*, 4 Iowa 199; *Tomlin v. The Dubuque B. & M. Co.*, 32 Iowa 106.

That the public right of navigation is a right paramount to all others in navigable waters, see Sec. 349.

See, also, *Musser v. Hershey*, 42 Iowa 356, 361; *McManus v. Carmichael*, 3 Iowa 1; *Delaware etc. R. Co. v. Stump*, 8 Gill & J. (Md.) 479, 510, 29 Am. Dec. 561; *Post v. Munn*, 4 N. J. L. 61, 7 Am. Dec. 570; *Davis v. Jenkins*, 5 Jones (N. C.) 290;

Other uses of waters of navigable waters of the United States⁵ are entirely subject to the right of navigation, and, where such uses seriously interfere or destroy that right they must give way to it, in any proceeding brought on behalf of the Government, and the fact be proved that the navigation was injured or destroyed by such uses. This is true, even though the State where the injury was done authorized by law such uses of the water or the obstructions in streams whereby the navigable capacity of the stream was injured or destroyed. As a general rule it may be stated that no State by legislation can destroy or authorize the destruction of the capacity of a body of water for navigation, unless such water is completely and absolutely within its jurisdiction, or navigable waters of the State.⁶ And, whatever may be its powers with respect to waters over which it has absolute dominion, it certainly can not destroy rights which belong equally to other

Hodges v. Williams, 96 N. C. 331, 59 Am. Rep. 242; *Flanagan v. Philadelphia*, 42 Pa. St. 219, in which was held the right of navigation in all rivers actually navigable is the paramount right of every citizen.

See *Cobb v. Bennett*, 75 Pa. St. 326, 15 Am. Rep. 752.

In England, the right of navigation is paramount to any right of property in the Crown, and the latter can not make a grant inconsistent with it. *Colchester v. Brooke*, 7 Q. B. 339, 15 L. J. Q. B. N. S. 59, 9 Jur. 1090; *Williams v. Wilcox*, 8 A. & E. 314, 3 Nev. & P. 606, 1 W. W. & H. 477, 7 L. J. Q. B. N. S. 299.

So, also, the right is superior to that of fishery. *Anonymous*, 1 Camp. 517, and note; *Lewis v. Keeling*, 1 Jones (N. C.) 299, 62 Am. Dec. 168; *Moulton v. Libby*, 37 Me. 472, 59 Am. Dec. 57; *Mason v. Mansfield*, 4 Cranch 580, Fed. Cas. No. 9243; *Commonwealth v. Chapin*, 5 Pick. 41, 16 Am. Dec. 386; *Steamboat "Globe" v. Kurtz*, 4 Greene (Iowa) 433; *Babcock v. Herbert*, 3 Ala. 392, 37 Am. Dec. 695.

The Vancouver, 2 Sawy. 381, Fed. Cas. No. 16,838, in which the Court held that a wire cable laid across the Wallamet River, as a guy on which to run a ferry boat, is not an unlawful obstruction to navigation unless it actually prevents or renders hazardous the navigation of the river by others. *Milwaukee Gas Light Co. v. "Gamecock"*, 23 Wis. 144, 99 Am. Dec. 138; *Scott v. Chicago*, 1 Biss. 510, Fed. Cas. No. 12,526; *Castello v. Landwehr*, 28 Wis. 522; *Gates v. Northern Pac. Ry. Co.*, 64 Wis. 64; *Chicago v. McGinn*, 51 Ill. 266, 2 Am. Rep. 295; *Felger v. Robinson*, 3 Ore. 458; *Treat v. Lord*, 42 Me. 552, 66 Am. Dec. 298; *Davis v. Winslow*, 51 Me. 297; *Gerrish v. Brown*, 51 Me. 256; *Browne v. Scofield*, 8 Barb. 243; *Morgan v. King*, 18 Barb. 288; *Deidrich v. N. W. Ry. Co.*, 42 Wis. 203; *Weise v. Smith*, 3 Ore. 446, 8 Am. Rep. 621; *Thunder Bay v. Speechly*, 31 Mich. 336, 18 Am. Rep. 184.

⁵ For the distinction, see Sec. 348.

⁶ As to streams within a State tributary to navigable waters of the United States, see Sec. 355.

States, to what is sometimes termed in the books as "easement" of navigation.⁷ And it may be considered as the settled law, that waters navigable in themselves in a State, and connecting with other navigable waters so as to form a waterway to other States or foreign nations, can not be obstructed or impeded so as to impair, defeat, or place any burden upon a right to their navigation granted by Congress.⁸

§ 350. Protection of navigation—Bridge Acts of Congress of March 3, 1899, and March 23, 1906.—By the River and Harbor Appropriation Act of March 3, 1899,¹ Congress provided, as follows:

"Sec. 9. That it shall not be lawful to construct or commence the construction of any bridge, dam, dike, or causeway over or in

⁷ The Clinton Bridge Co., 1 Woolrych 150, Fed. Cas. No. 2900.

See, also, *Ewing v. Colquhoun*, L. R. 2 App. Cas. 839.

While the term "easement" is used quite generally in books as applied to the right of the public to navigation upon all streams capable of the same, it must be understood rather in the popular than in a strictly legal sense. In *Barnard v. Hinkley*, 10 Mich. 459, *Christiancy, J.*, says: "Nor do we think the right of navigation in a public river can with propriety be treated as real estate vested in the public or the State for the benefit of every individual who may have occasion to use it. It is a public right, but we see no reason to call it real estate; it is sometimes called a 'public easement,' but we do not think it comes within the meaning of the term easement, as used to designate an incorporeal hereditament, as a right of way belonging to one person or estate, over the lands of another."

⁸ Const. U. S., Art. 1, Sec. 8, Cls. 2, 4, 17; Sec. 9, Cl. 5; Sec. 10, Cl. 2; Art. 6, Cl. 1; *Harmon v. Chicago*, 147 U. S. 396, 37 L. Ed. 216, 13 Sup.

Ct. Rep. 306, reversing 140 Ill. 374, 29 N. E. Rep. 732; *Sinnot v. Davenport*, 63 U. S. 22 How. 227, 16 L. Ed. 243; *Hatch v. Wallamet Bridge Co.*, 7 Sawy. 127, 6 Fed. Rep. 326; *Gibbons v. Ogden*, 22 U. S. 9 Wheat. 1, 6 L. Ed. 23; *Moran v. New Orleans*, 112 U. S. 69, 28 L. Ed. 653, 5 Sup. Ct. Rep. 38; *Brown v. Maryland*, 25 U. S. 12 Wheat. 419, 6 L. Ed. 678; *Guthrie v. McConnel*, 2 Ohio Dec. 157, 1 West. Law Month. 593; *Cass County v. Chicago, B. & Q. R. Co.*, 25 Neb. 348, 41 N. W. Rep. 246, 2 L. R. A. 188; *Pennsylvania v. Wheeling & B. B. Co.*, 54 U. S. 13 How. 518, 14 L. Ed. 249; *St. Joseph County v. Pidge*, 5 Ind. 13; *Thompson v. People ex rel. Taylor*, 23 Wend. 537; *Columbus Ins. Co. v. Peoria Bridge Assn.*, 6 McLean 70, Fed. Cas. No. 3,046; *Jolly v. Terre Haute Draw-Bridge Co.*, 6 McLean 237, Fed. Cas. No. 7,441; U. S. *ex rel. Jones v. Fanning, Morris (Iowa)* 348.

16 Fed. Stat. Ann., 1905, pp. 804-821, Secs. 8-20; 3 U. S. Comp. Stats., 1901, p. 3540; 30 Stat. L. 1150.

For the construction of this Act, see Secs. 352, 353.

any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States until the consent of Congress to the building of such structure shall have been obtained and until the plans for the same shall have been submitted to and approved by the Chief of Engineers and by the Secretary of War. *Provided*, That such structures may be built under the authority of the legislature of a State across rivers and other waterways the navigable portions of which lie wholly within the limits of a single State, provided the location and plans thereof are submitted to and approved by the Chief of Engineers and by the Secretary of War before construction is commenced. *And, provided further*, That when plans for any bridge or other structure have been approved by the Chief of Engineers and by the Secretary of War, it shall not be lawful to deviate from such plans either before or after completion of the structures, unless the modification of said plans has been submitted to and received the approval of the Chief of Engineers and of the Secretary of War.

“Sec. 10. That the creation of any obstruction not affirmatively authorized by Congress to the *navigable capacity* of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside of established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner alter or modify the course, location, condition, or capacity of any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to the beginning of the same.”

Sec. 11 provides for the establishment of harbor lines and displacements by fillings, etc.

Sec. 12 provides for the penalty for the violations of the Act and the removal of such obstructions, in the following language:

“Sec. 12. That every person and every corporation that shall

violate any of the provisions of Sections 9, 10, and 11 of this Act, or any rule or regulation made by the Secretary of War in pursuance of the provisions of said Section 11, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding twenty-five hundred dollars, nor less than five hundred dollars, or by imprisonment (in case of a natural person) not exceeding one year, or by both such punishments, in the discretion of the Court. And further, the removal of any structures or parts of structures erected in violation of the provisions of the said sections may be enforced by the injunction of any Circuit Court exercising jurisdiction in any district in which any such structures may exist, and proper proceedings may be instituted, under the direction of the Attorney General of the United States."

Sections 13 to 20 relate to other subjects than those under discussion of this work.

By the amendatory and supplemental Act of March 23, 1906, entitled, "An Act to regulate the construction of bridges over navigable waters,"² Congress still further provided for the construction of bridges over navigable waters by providing, in Section 1 of said Act, as follows:

"Sec. 1. That when, hereafter, authority is granted by Congress to any persons to construct and maintain a bridge across or over any of the navigable waters of the United States, such bridge shall not be built or commenced until the plans and specifications for its construction, together with such drawings of the proposed construction and such map of the proposed location as may be required for a full understanding of the subject, have been submitted to the Secretary of War and Chief of Engineers for their approval, nor until they shall have approved such plans and specifications and the location of such bridge and accessory works; and when the plans for any bridge to be constructed under the provisions of this Act have been approved by the Chief of Engineers and by the Secretary of War it shall not be lawful to deviate from such plans, either before or after the completion of the structure, unless the modification of such plans has been previously submitted to and received the approval of the Chief of Engineers and of the Secretary of War."

Sec. 5 of the Act prescribes severe penalties for the failure or

² Supp. Fed. Stat. Ann., 1909, p. 600; 34 Stat. L. 84.

refusal to comply with the lawful order of the Secretary of War or the Chief of Engineers, made in accordance with the provisions of the Act.

§ 351. **Protection of navigation—The Dam Acts of Congress of March 3, 1899, June 21, 1906, and June 23, 1910.**—Congress has the undoubted power to grant the right to construct a certain dam across a certain navigable river or other navigable waters of the United States. But under the Act of March 3, 1899, such a dam can not be lawfully constructed, or its construction commenced, “until the consent of Congress shall have been obtained, and until the plans for the same shall have been submitted to and approved by the Chief of Engineers and by the Secretary of War.”¹ By the supplemental and amendatory Act of June 21, 1906,² entitled, “An Act to regulate the construction of dams across navigable streams,” Congress still further provided for the construction and the regulation of the construction of dams across the navigable waters of the United States. But by the Act of June 23, 1910, the law relative to the construction of dams was entirely amended, to provide, as follows:³

“Section 1. That when authority has been or may hereafter be granted by Congress, either directly or indirectly, or by any official or officials of the United States, to any persons, to construct and maintain a dam for water power or other purpose across or in any of the navigable rivers of the United States, such dam shall not be built or commenced until the plans and specifications for such dam and all accessory works, together with the drawings of the proposed construction and such map of the proposed location as may be required for a full understanding of the subject have been submitted to the Secretary of War and the Chief of Engineers for their approval, nor until they shall have approved such plans and specifications and the location of such dam and accessory works; and when the plans and specifications for any dam to be constructed under the provisions of this Act have been approved by the Chief

¹ For Act of March 3, 1899, see 6 Fed. Stat. Ann., 1905, p. 805; 3 U. S. Comp. Stat., 1901, p. 3540; 30 Stat. L. 1151.

² Supp. Fed. Stat. Ann., 1909, p. 604; 34 Stat. L. 386.

³ For the Act of June 23, 1910, see Supp. U. S. Comp. Stat. 1911, p. 1558; 36 Stat. L. 593.

of Engineers and by the Secretary of War, it shall not be lawful to deviate from such plans or specifications, either before or after completion of the structure, unless the modification of such plans or specifications has previously been submitted to and received the approval of the Chief of Engineers and of the Secretary of War: *Provided*, That in approving the plans, specifications, and location for any dam, such conditions and stipulations may be imposed as the Chief of Engineers and the Secretary of War may deem necessary to protect the present and future interests of the United States, which may include the condition that the persons constructing or maintaining such dam shall construct, maintain, and operate, without expense to the United States, in connection with any dam and accessory or appurtenant works, a lock or locks, booms, sluices, or any other structure or structures which the Secretary of War and the Chief of Engineers or Congress at any time may deem necessary in the interests of navigation, in accordance with such plans as they may approve, and also that whenever Congress shall authorize the construction of a lock or other structures for navigation purposes in connection with such dam, the persons owning such dam shall convey to the United States, free of cost, title to such land as may be required for such constructions and approaches, and shall grant to the United States free water-power or power generated from water-power for building and operating such constructions: *Provided further*, That in acting upon said plans as aforesaid the Chief of Engineers and the Secretary of War shall consider the bearing of said structure upon a comprehensive plan for the improvement of the waterway over which it is to be constructed, with a view to the promotion of its navigable quality and for the full development of water-power; and, as a part of the conditions and stipulations imposed by them, shall provide for improving and developing navigation, and fix such charges for the privilege granted as may be sufficient to restore conditions with respect to navigability as existing at the time such privilege be granted, or reimburse the United States for doing the same, and for such additional or further expense as may be incurred by the United States with reference to such project, including the cost of any investigations necessary for approval of plans and of such supervision of construction as may be necessary in the interests of the United States: *Provided further*, That the Chief of Engineers

and the Secretary of War are hereby authorized and directed to fix and collect just and proper charge or charges for the privilege granted to all dams authorized and constructed under the provisions of this Act which shall receive any direct benefit from the construction, operation, and maintenance by the United States of storage reservoirs at the head waters of any navigable streams, or from the acquisition, holding, and maintenance of any forested watershed, or lands located by the United States at the headwaters of any navigable stream, wherever such shall be, for the development, improvement, or preservation of navigation in such streams in which such dams may be constructed.

“Sec. 2. That the right is hereby reserved to the United States to construct, maintain, and operate, in connection with any dam built in accordance with the provisions of this Act, a suitable lock or locks, booms, sluices, or any other structures for navigation purposes, and at all times to control the said dam and the level of the pool caused by said dam to such extent as may be necessary to provide proper facilities for navigation.

“Sec. 3. That the persons constructing, maintaining, or operating any dam or appurtenant or accessory works in accordance with the provisions of this Act, shall be liable for any damage that may be inflicted thereby upon private property, either by overflow or otherwise. The persons owning or operating any such dam or accessory works, subject to the provisions of this Act, shall maintain, at their own expense, such lights and other signals thereon and such fishways as the Secretary of Commerce and Labor shall prescribe, and for failure so to do in any respect shall be deemed guilty of a misdemeanor and subject to a fine of not less than \$500, and each month of such failure shall constitute a separate offense and subject such person to additional penalties therefor.

“Sec. 4. That all rights acquired under this Act shall cease and be determined if the person, company, or corporation acquiring such rights shall, at any time, fail, after receiving reasonable notice thereof, to comply with any of the provisions and requirements of the Act, or with any of the stipulations and conditions that may be prescribed as aforesaid by the Chief of Engineers and the Secretary of War, including the payment into the Treasury of the United States of the charges provided for by Section 1 of this Act: *Provided*, That Congress may revoke any rights conferred in pur-

suance of this Act whenever it is necessary for public use, and, in the event of any such revocation by Congress, the United States shall pay the owners of any dam and appurtenant works built under the authority of this Act, as full compensation, the reasonable value thereof, exclusive of the value of the authority or franchise granted, such reasonable value to be determined by mutual agreement between the Secretary of War and the said owners, and in case they can not agree, then by proceedings instituted in the United States Circuit Court for the condemnation of such properties: *And provided also*, That the authority granted under or in pursuance of the provisions of this Act, shall terminate at the end of a period not to exceed fifty years from the date of the original approval of the project under this Act, unless sooner revoked as herein provided or Congress shall otherwise direct: *Provided, however*, That this limitation shall not apply to any corporation or individual heretofore authorized by the United States, or by any State, to construct a dam in or across a navigable waterway, upon which dam expenditures of money have heretofore been made in reliance upon such grant or grants.

“Sec. 5. That any persons who shall fail to comply with the lawful order of the Secretary of War and the Chief of Engineers, made in accordance with the provisions of this Act, shall be deemed guilty of a violation of this Act, and any persons who shall be guilty of a violation of this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding \$5,000, and every month such persons shall remain in default shall be deemed a new offense and subject such persons to additional penalties therefor; and, in addition to the penalties above described, the Secretary of War and the Chief of Engineers may, upon refusal of the persons owning or controlling any such dams and accessory works to comply with any lawful order issued by the Secretary of War or Chief of Engineers in regard thereto, cause the removal of such dam and accessory works as an obstruction to navigation at the expense of the persons owning or controlling such dam, and suit for such expense may be brought in the name of the United States against such persons and recovery had for such expense in any Court of competent jurisdiction. Said provision as to recovery of expense shall not apply wherever the United States has been previously reimbursed for such removal; and the removal

of any structures erected or maintained in violation of the provisions of this Act, or the order or direction of the Secretary of War or the Chief of Engineers made in pursuance thereof may be enforced by injunction, mandamus, or other summary process, upon application to the Circuit Court in the district in which such structure may, in whole or in part, exist, and proper proceedings to this end may be instituted under the direction of the Attorney General of the United States at the request of the Chief of Engineers or the Secretary of War; and in case of any litigation arising from any obstruction or alleged obstruction to navigation created by the construction of any dam under this Act, the cause or question arising may be tried before the Circuit Court of the United States in any district in which any portion of said obstruction or dam touches.

“Sec. 6. That whenever Congress shall hereafter, by law, authorize the construction of any dam across any of the navigable waters of the United States, and no time for the commencement and completion of such dam is named in said Act, the authority thereby granted shall cease and be null and void, unless the actual construction of the dam authorized in such Act be commenced within one year and completed within three years from the date of the passage of such Act.

“Sec. 7. That the right to alter, amend, or repeal this Act is hereby expressly reserved as to any and all dams which may be constructed, in accordance with the provisions of this Act, and the United States shall incur no liability for the alteration, amendment, or repeal thereof to the owner or owners or any other persons interested in any dam which shall have been constructed in accordance with its provisions.

“Sec. 8. That the word ‘persons’ as used in this Act shall be construed to import both singular and plural, as the case demands, and shall include corporations, companies, and associations. The word ‘dam’ as used in this Act shall be construed to import both the singular and the plural, as the case demands.”

§ 352. Protection of navigation by Congress—Prohibiting the obstruction of navigation—Construction of Acts.—It was held in some of the earlier cases, and in the face of the Federal statute as it then stood, that until Congress acted upon the subject, the legislature of any State had the power to authorize the obstruction

of any navigable waters within its borders by the authorization of the construction of dams, bridges, or other structures.¹ But by Sections 8 to 20 of the River and Harbor Appropriation Act of March 3, 1899,² which Act superseded the Act of September 19, 1890,³ Congress, evidently alarmed by the numerous dams and bridges constructed under the authority of the States, which constituted obstructions to the navigable waters of the United States, spoke in no uncertain tones upon the subject, and enacted a general law forbidding the placing of any of such constructions in any

¹ *Cardwell v. American Bridge Co.*, 9 Saw. 662, 19 Fed. Rep. 562, Aff'd 113 U. S. 205, 28 L. Ed. 959, 5 Sup. Ct. Rep. 423; *Milnor v. New Jersey R. Co.*, 6 Am. Law. Reg. 6, Fed. Cas. No. 9,620; *Escanaba & L. M. Transp. Co. v. Chicago*, 107 U. S. 678, 27 L. Ed. 442, 2 Sup. Ct. Rep. 185; *Oregon City Transp. Co. v. Columbia Bridge Co.*, 53 Fed. Rep. 549.

See, also, for cases bearing upon the question of the unlawful obstruction of the navigable waters of the United States the following: *United States v. Rio Grande etc. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428; *People v. Gold Run etc. Co.*, 66 Cal. 138, 4 Pac. Rep. 1152, 56 Am. St. Rep. 80; *United States v. North Bloomfield etc. M. Co.*, 81 Fed. Rep. 243; *The Debris Cases*, 18 Fed. Rep. 752; *Newport etc. Co.*, 105 U. S. 470, 26 L. Ed. 1143; *Luxton v. North River etc. Co.*, 153 U. S. 525, 38 L. Ed. 808, 14 Sup. Ct. Rep. 891; *United States v. Moline*, 82 Fed. Rep. 592; *United States v. Milwaukee etc. Co.*, 5 Biss. 410, Fed. Cas. No. 15,778; *Pennsylvania etc. Co. v. Wheeling etc. Bridge Co.*, 59 U. S. 18 How. 421, 15 L. Ed. 435; *Miller v. New York*, 13 Blatchf. 469, Fed. Cas. No. 9,585; *Trullinger v. Howe*, 53 Ore. 219, 97 Pac. Rep. 549, 99 Pac. Rep. 880, 22 L. R. A., N. S. 545; *Stockton v. Balti-*

more etc. R. Co., 1 Interstate Commerce Rep. 411, 32 Fed. Rep. 9; *The Clinton Bridge Case*, 1 Woolwrych 150; *Charnley v. Shawano Water etc. Co.*, 109 Wis. 563, 85 N. W. Rep. 507, 53 L. R. A. 895; *Ogdensburg v. Lovejoy*, 2 Thomp. & C. 82, 58 N. Y. 662; *Southern R. Co. v. Ferguson*, 105 Tenn. 552, 59 S. W. Rep. 343, 80 Am. St. Rep. 908; *State v. Portland etc. Co.*, 52 Ore. 502, 95 Pac. Rep. 722, 98 Pac. Rep. 160; *Renwick v. Morris*, 7 Hill 575; *Ogdensburg v. Lovejoy*, 2 Thomp. & C. 82, 58 N. Y. 662; *Chicago v. Laflin*, 49 Ill. 172; *Atty.-Gen. ex rel. Mann v. Revere Copper Co.*, 152 Mass. 444, 25 N. E. Rep. 605, 9 L. R. A. 510; *Olive v. State*, 86 Ala. 88, 5 So. Rep. 652, 4 L. R. A. 33; *State v. Franklin Falls Co.*, 49 N. H. 240, 6 Am. Rep. 513; *State v. Roberts*, 59 N. H. 256, 47 Am. Rep. 199; *Collins v. Howard*, 65 N. H. 190, 18 Atl. Rep. 794; *Knox v. Chaloner*, 42 Me. 150; *Veazie v. Dwinel*, 50 Me. 497.

² 6 Fed. Stat. Ann., 1905, pp. 804-821; 3 U. S. Comp. Stat., 1901, p. 3540; 30 Stat. L. 1150.

For full text of the Act as far as it relates to the construction of dams, etc., over navigable streams, see Sec. 351.

³ For text of Act of September 19, 1890, see Note 6, Fed. Stat. Ann., 1905, p. 805; 26 Stat. L. 453.

of the navigable waters of the United States, which include the navigable rivers, unless the same should be directly authorized by Congress, and until the plans for the same shall have been submitted to and approved by the Chief of Engineers and by the Secretary of War, and provided for severe penalties against the violations of the provisions of the Act. The Act as originally passed in 1890, forbade the creation of any such obstruction "not affirmatively authorized by law"; and, therefore, it was held by the Supreme Court of the United States, that if the obstruction was authorized by the law of a State, it did not come within the condemnation of the section, and such obstructions to the navigable waters of the United States might be constructed.⁴ But by the superseding Act of March 3, 1899,⁵ the wording of the law was changed, and it was made unlawful to construct or commence the construction of any such obstructions of any of the navigable waters of the United States "until the consent of Congress to the building of such structures shall have been obtained and until the plan for the same shall have been submitted and approved by the Chief of Engineers and by the Secretary of War." This effectually disposed of the question of the right of a State to pass an Act authorizing such obstructions to any of the navigable waters of the United States.

But Congress did not stop with the Act of March 3, 1899,⁶ but by the Act of March 23, 1906,⁷ Congress placed still further restrictions and regulations upon the construction of bridges over the navigable waters of the United States, after the right to construct the same has been affirmatively granted by an Act of Congress, which construction must be subject at all times to the approval, rules, and regulations imposed by the Chief of Engineers and the Secretary of War. Also by the Act of June 21, 1906,⁸ as amended and supplemented by the Act of June 23, 1910.⁹ Also by the Act of June 21, 1906,¹⁰ to regulate the construction of dams across navi-

⁴ *United States v. Bellingham Bay Boom Co.*, 176 U. S. 211, 44 L. Ed. 437, 20 Sup. Ct. Rep. 343; *United States v. Hall*, 63 Fed. Rep. 472, 11 C. C. A. 294, 21 U. S. App. 402; *United States v. Burnes*, 54 Fed. Rep. 351; *Northern Pac. R. Co. v. U. S.*, 104 Fed. Rep. 691, 44 C. C. A. 135, 59 L. B. A. 80.

⁵ See references, *supra*.

⁶ For text of Act, see Sec. 350.

⁷ *Supp. Fed. Stat. Ann.*, 1909, p. 600; 34 Stat. L. 84.

⁸ For text of Act, see *Supp. Fed. Stat. Ann.*, 1909, p. 604; 34 Stat. L. 386.

⁹ *Supp. U. S. Comp. Stat.*, 1911, p. 1558; 36 Stat. L. 593.

¹⁰ For text of Act, see Sec. 351.

gable waters of the United States, after an Act has been passed by Congress permitting the construction of such a dam, it is made unlawful to construct or commence the construction across any of the navigable waters of the United States, until the plans and specifications for its construction, together with the drawings of the proposed construction and such map of the proposed location have been submitted to the Secretary of War and Chief of Engineers for their approval, and until they shall have been approved by them. Rights are also reserved by the United States to maintain navigation through the dams by means of locks and other works necessary. The owners and persons in control of such dams must at all times comply with all of the provisions and requirements of the Act and with the stipulations and conditions that may be prescribed by the Chief of Engineers and the Secretary of War; otherwise a forfeiture of the rights acquired is worked. Severe penalties are also prescribed for a failure to comply with the provisions of the Act, and "the lawful order of the Secretary of War and the Chief of Engineers."

As we view the matter, Congress has covered the whole question prohibiting any obstructions being placed in the navigable streams of the United States, whereby the capacity for navigation is diminished. Whatever may be said in reference to obstructions existing at the time of the passage of the Acts, especially of that of March 3, 1899, under the authority of the State statutes, it is obvious that by the Act of that date and the later Acts regulating the construction of bridges and dams, that Congress means that hereafter no State, corporation, or individual, under the authority of a State, or on their own accord, shall interfere with the navigation of any stream or other body of water of the United States, without the condition of first obtaining national assent. Nor do we have to rely entirely upon the wording of the statute for our interpretation. Fortunately, the Supreme Court of the United States has construed the Act of March 3, 1899,¹¹ as constitutional in recent cases, notably the case of the Union Bridge Co. v. United States.¹² And in that case it was held that legislative and judicial powers are not unconstitutionally delegated to the Secretary of War by the provisions of the Act, empowering that official, after a hearing of

11 See reference, *supra*.

12 204 U. S. 364, 51 L. Ed. 523, 27 Sup. Ct. Rep. 367.

the parties interested, as provided for in Section 18, as to a bridge over a navigable waterway of the United States being an unreasonable obstruction to navigation, to require such changes or alterations as will render navigation reasonably safe, easy, and unobstructed;¹³ and, further, that the requiring the alterations or changes in a bridge over such waters is not a taking of private property for public use, for which the Federal Constitution requires compensation to be made, but is merely incidental to the exercise by the Government of its power to regulate commerce among the States.¹⁴ And Mr. Justice Harlan, in delivering the opinion of the Court, said: "In conformity with the adjudged cases, and in order that the constitutional power of Congress may have full operation, we must adjudge that Congress has power to protect navigation on all waterways of the United States against unreasonable obstructions, even created under the sanction of a State."

We will now take up the question of the destruction of the navigability of streams by other means than by obstructions at points where such streams are actually navigable.¹⁵

§ 353. The destruction of the navigability of streams.—There are other methods of destroying the navigable capacity of a body of water than by the construction of bridges, or dams, at navigable points, which we have discussed in previous sections.¹ Dams may be constructed higher up on the stream than the point of navigability, which hold the water back that would otherwise naturally flow down and add to the flow in the navigable portion. The waters of the streams themselves may be diverted from their natural channels and conducted to either other channels, or practically con-

¹³ See, also, *New Orleans Gaslight Co. v. Drainage Com.*, 197 U. S. 453, 49 L. Ed. 831, 25 Sup. Ct. Rep. 471; *Chicago, B. & Q. R. Co. v. Illinois*, 200 U. S. 561, 50 L. Ed. 596, 26 Sup. Ct. Rep. 341; *West Chicago St. Ry. Co. v. Illinois*, 201 U. S. 506, 50 L. Ed. 845, 26 Sup. Ct. Rep. 518; *Monongahela Bridge v. United States*, 216 U. S. 177, 54 L. Ed. 435, 30 Sup. Ct. Rep. 356; *North Shore Boom Co. v. Nicomen Boom Co.*, 212 U. S. 406, 53 L. Ed. 574, 29 Sup. Ct. Rep. 355.

¹⁴ See, also, *Buttfield v. Stranahan*, 192 U. S. 470, 48 L. Ed. 525, 24 Sup. Ct. Rep. 349; *Marshall Field & Co. v. Clark*, 143 U. S. 649, 36 L. Ed. 294, 12 Sup. Ct. Rep. 495; *U. S. v. Moline*, 82 Fed. Rep. 592; *Chatfield Co. v. New Haven*, 110 Fed. Rep. 788; *Scranton v. Wheeler*, 179 U. S. 141, 45 L. Ed. 126, 21 Sup. Ct. Rep. 48.

¹⁵ See Secs. 354-356.

¹ See Secs. 350-352.

sumed, as far as the flow of the stream is concerned, by the use of the water—notably for irrigation—thereby lessening the flow of the navigable portion of the stream. The waters from the tributaries of the stream may be diverted from their natural course to such an extent that the capacity for the navigation of the main river may be partially or wholly destroyed. All of these must in time give way to the paramount right of navigation, unless Congress makes some radical changes in the law as it now stands, based upon the theory of the relative importance of interests. In the Western portion of this country the navigable streams are few, and the navigation not very extensive on them. In many portions the agricultural interests are far more important than the navigation. In fact, there can be very little navigation without the agricultural products; and, upon the other hand, all agriculture depends upon the water from the streams. It is true that there has never been any serious conflict between these interests. But as the years go on and the country becomes more and more settled up, this conflict between these two interests will become sharper and sharper, as more water is taken from the rivers or their tributaries, and hence less water is permitted to flow down the river which may be used for navigation purposes. In fact, in many of the Western rivers, which formerly were considered navigable, there is already a notable change toward the impairment of navigation during the summer season when the water is needed the most for both uses. Now the question is, where is this conflict to end? Is the inferior navigation of these few and small streams to give way to the march of progress, resulting in the settling up of these vast tracts, and the cultivation of more land, requiring more water to properly cultivate? Or is navigation, like the dog in the manger, to stop all this progress, and remain of paramount right as the law is today? Or are there to be established in this country comprehensive systems of waterways, similar to those of other countries, notably in India² and Italy?³ Here, by comprehensive schemes of river improvement, both navigation and irrigation are regarded as co-ordinate industries. The agricultural interests are not impaired by the reservation of the water for navigation, but the land is cultivated under the most intensive methods; and at the same time the navigation is main-

² For irrigation in India, see Chap. 5, Secs. 103-118.

³ For irrigation in Italy, see Chap. 8, Secs. 144-159.

tained by systems of narrow and deep channels, locks, and dams, great care being taken to return all surplus water to the channels, and other provisions, necessary to the maintenance of both industries. It is true that we have made vast progress in our laws regulating waters during the last decade. It is also true that our laws have not yet arrived at the acme of perfection as far as all interests are concerned.

In a preceding section of this work, we discussed the subject, from an economic standpoint, of irrigation as an aid to navigation.⁴ By systems of reservoirs and the storage therein of the storm or flood waters of the navigable rivers of the country at the time when such waters are not needed for either navigation or irrigation, and when such waters would otherwise run to waste, and by letting down these waters during periods of drought, the navigable capacity of our rivers can be immensely increased, and, at the same time a great quantity of these waters be used for the purpose of the irrigation of lands. But the trouble now is that these storage systems are not to any great extent constructed. Therefore, the waters of the streams have to be diverted directly from them during the irrigation period, which is the same period that the water is the lowest in the navigable streams and needed the most for that use. But the diversion of great quantities of water from the rivers and their tributaries during the summer months can have only the physical effect of lowering the waters in the rivers below during that same period, and thereby injuring the navigable capacity of those rivers. It is true that a certain portion of the water so diverted and used finds its way back into the streams, and, eventually, to the lower or navigable portions of the rivers. But it is also true that a great portion of the water is evaporated,⁵ transpired,⁶ or is lost in the soil.⁷ And there being the greatest demand for water at the same season of the year, as the situation now stands, there is bound to be a greater or less conflict of interests, which must be eventually adjusted in some manner.

We will now take up the subject of the relative rights of navigation and irrigation as the law now stands in this country.⁸

⁴ See Sec. 12.

⁵ See Secs. 26, 27.

⁶ See Sec. 28.

⁷ See, also, Sec. 23.

⁸ See Secs. 354-356.

§ 354. **Navigation as against irrigation.**—As we have said, the jurisdiction of the general Government over interstate commerce and its natural highways vests in the Government the absolute right to take all needed measures to preserve the navigability of the navigable water courses of the country, even against the action of any State. Congress, upon the other hand, as we view the law upon the subject, has the full power to pass such laws as will eventually destroy navigation. In other words, the jurisdiction of all waters of the United States is entirely vested in Congress, and it may pass such acts relative to them as it sees fit, entirely regardless of the laws passed by any State legislature, and regardless of any particular industries affected in any locality.¹ Congress has seen fit to place the navigation of all the public waters of the United States paramount to all other uses of water.² We have referred to the Act passed in 1796, shortly after the formation of our Government, declaring that all navigable rivers, within the territory occupied by the public lands, shall remain and be deemed public highways.³ That Act is still in full force and effect. It is true that later, by the Act of July 26, 1866,⁴ Congress recognized, so far as the United States is concerned, the validity of the local customs, laws, and decisions of courts in respect to the appropriation of water, which customs, laws, and decisions were in direct contravention of the common law theory, that the lower riparian owner might insist upon the continuous flow of the stream as it was wont to flow.⁵ The Act of July 9, 1870,⁶ was still a further recognition of this right. Also, in 1877, an Act was passed for the sale of desert lands,⁷ granting the right of appropriation of water from the streams, and

¹ See Secs. 348, 350-353.

² As to what are public waters of the United States, see Sec. 348.

³ Fed. Stat. Ann., 1905, p. 787;
² U. S. Comp. Stat., 1901, p. 1567;
 Rev. Stat. of U. S., Sec. 2476; 1 Stat. L. 468, 2 Stat. L. 235.

See, also, Sec. 347.

⁴ 7 Fed. Stat. Ann., 1905, p. 1090;
² U. S. Comp. Stat., 1901, p. 1437;
 Rev. Stat. of U. S., 1878, Sec. 2339;
 14 Stat. L. 253.

See, also, Secs. 611-619, where this Act is more thoroughly discussed.

38—Vol. I—Kin. on Irr.

For copy of Act, see Sec. 611.

⁵ For common law theory, see Secs. 543-547.

⁶ 7 Fed. Stat. Ann., 1905, p. 1096;
² U. S. Comp. Stat., 1901, p. 1437;
 Rev. Stat. of U. S., 1878, Sec. 2340;
 16 Stat. L. 218.

For copy of Act, see Sec. 615.

For copy of Act, see Sec. 615.

⁷ 6 Fed. Stat. Ann., 1905, p. 392;
² U. S. Comp. Stat., 1901, p. 1549;
 19 Stat. L. 377.

For copy of Act, see chapter on Desert Lands, Chap. 66.

that "the water of all lakes, rivers, and other sources of water supply upon the public lands *and not navigable*, shall remain and be held free for irrigation, mining, and manufacturing purposes subject to existing rights. Also on March 3, 1891, an Act was passed repealing a prior Act in respect to timber culture, Section 18 of which provided ⁸ that the provisions therein granted should not be construed to interfere with the control of waters for irrigation and other purposes under the authority of the respective States or Territories. Then came the Reclamation Act of June 17, 1902,⁹ whereby the Government itself went into the business of the construction of irrigation works in the Western portion of this country; Section 6 providing that the title to and the management and operation of the reservoirs and works shall remain in the Government until otherwise provided by Congress. In none of these Acts is there any express right given to appropriate the waters of any navigable body of water of the United States, or in any way interfere with the navigable capacity of any of these waters. In one of these Acts the navigable waters were expressly reserved, notably the Act of 1877, from these appropriations. And, as was said by the Supreme Court of the United States, in the case of the United States v. Rio Grande Dam & Irrigation Co.,¹⁰ "to infer therefrom that Congress intended to release its control over the navigable streams of the country and to grant in aid of mining industries and the reclamation of arid lands the right to appropriate the waters on the sources of navigable streams to such an extent as to destroy their navigability, is to carry those statutes beyond what their fair import permits."

⁸ 6 Fed. Stat. Ann., 1905, p. 508;
² U. S. Comp. Stat., 1901, p. 1570;
 26 Stat. L. 1101.

For copy of Act, see Sec. 937.

See, also, Secs. 937-950.

There is nothing in this Act, or its purposes which was intended to affect the control or supervision of the navigable waters of the United States. Such control and supervision are vested in the Secretary of War. Hence the Act confers on the Secretary of the Interior no power to grant a right to construct dams across the Rio Grande River for the purpose of

checking the flow of the water and distributing it for irrigation purposes. 21 Op. Atty. Gen. 518.

See, also, U. S. v. Rio Grande Dam & Irr. Co., 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 2d Appeal, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428.

⁹ 7 Fed. Stat. Ann., 1905, p. 1098; Supp. U. S. Comp. Stat., 1905, p. 349; 32 Stat. L. 388.

For copy of Act, see Chap. 65, on National Reclamation Act.

¹⁰ 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 184 U. S.

Upon the other hand, Congress has passed Acts directly forbidding the interference with the navigable capacity of any of the navigable waters of the United States. By the Act of September 19, 1890,¹¹ as amended by the Act of March 3, 1899,¹² it is expressly provided, that the creation of any obstruction *not affirmatively authorized by Congress, to the navigable capacity* of any of the waters of the United States was thereby prohibited; and the section further provides that it shall not be lawful to alter or modify the course, location, condition, or capacity of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to the beginning of the same. Section 12 of the Act provides for severe penalties against any person or corporation violating any of the provisions of Section 10. But Congress did not stop here; by the Act of March 23, 1906,¹³ and that of June 21, 1906,¹⁴ as the latter Act was amended by that of June 23, 1910,¹⁵ Congress provided that no bridge or dam, which would form an obstruction over navigable waters, should be constructed, until the plans and specifications for their construction should be approved by the Chief of Engineers and the Secretary of War, and a permit granted for the construction of the same, and both Acts providing for severe penalties for the violation of their terms.

It is evident that Congress, perceiving that the old rule that a State could authorize any obstructions to the navigability of a stream or body of water of the United States until interfered with by Congress,¹⁶ was gradually leading to the destruction of the inland waterways of the country as far as the purposes of navigation were concerned, and that the time had come that the navigable waters of the United States should be subjected to the direct control of the National Government, and that nothing should be done by

416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428.

¹¹ See 6 Fed. Stat. Ann., 1905, p. 805, note; 3 U. S. Comp. Stat., 1901, p. 3540, note; 26 Stat. L. 454, Sec. 10.

¹² 6 Fed. Stat. Ann., 1905, p. 813, Sec. 10; 3 U. S. Comp. Stat., 1901, p. 3541; 30 Stat. L. 1151, Sec. 10.

For copy of Act, see Sec. 350.

See, also, Secs. 351, 352.

¹³ Fed. Stat. Ann. Supp., 1909, p. 600; 34 Stat. L. 84; Supp. U. S. Comp. Stat., 1912.

¹⁴ Fed. Stat. Ann. Supp., 1909, p. 604; 34 Stat. L. 386; Supp. U. S. Comp. Stat., 1912.

¹⁵ Supp. U. S. Comp. Stat., 1911, p. 1558; 36 Stat. L. 593.

For copy of this Act, see Sec. 351.

¹⁶ See Sec. 352.

any State tending to destroy the navigability of any of these waters without the explicit consent of the Government. By the Act of March 1, 1911,¹⁷ entitled, "An Act to enable any State to co-operate with any other State or States, or with the United States, for the protection of watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable streams," Congress took advanced steps for the protection of navigation.¹⁸ It is the purpose of the Act to purchase lands which have passed into private ownership, where, by conserving the forests upon such lands, it will tend to regulate and conserve the navigability of navigable rivers. The Act, although intending to apply more especially to the Eastern States, where such lands are mostly in private ownership, is of general application and applies to all portions of the country.

§ 355. **Navigation as against irrigation—Interference with tributaries.**—The interference with the flow of water of the tributaries of a river or other body of water may interfere with its navigable capacity. The Acts of March 3, 1899, Section 10,¹ as supplemented by the Act of March 23, 1906,² relating to bridges and dams, and the Acts of March 3, 1899,³ as supplemented and amended by the Act of June 21, 1906,⁴ and the amendatory Act of June 23, 1910,⁵ relating only to dams, not only prohibit any obstruction to navigation, but also any obstruction or interference with the *navigable capacity* of any of the waters coming within the definition of the navigable waters of the United States; and anything whatever done, or however done, which tends to destroy the navigable capacity of these waters, is within the terms of the prohibition of the Acts. It is a well-known fact, that most of the small streams of this country, although they in themselves may or may not be navigable, are tributaries of the navigable waters of the United States. It is also a

¹⁷ U. S. Comp. Stat., Supp. 1911, p. 652; 36 Stat. L. 961.

¹⁸ For the provisions of the Act, see Sec. 422.

¹ 6 Fed. Stat. Ann., 1905, p. 813; 3 U. S. Comp. Stat., 1901, p. 3540; 30 Stat. L. 1151. For copy of section, see Sec. 350.

See, also, Sec. 351.

² Supp. Fed. Stat. Ann., 1909, p. 600; 34 Stat. L. 84.

See, also, Secs. 350.

³ 6 Fed. Stat. Ann., 1905, p. 805; 3 U. S. Comp. Stats., 1901, p. 3540; 30 Stat. L. 1151.

⁴ Supp. Fed. Stat. Ann., 1909, p. 604; 34 Stat. L. 386.

⁵ Supp. U. S. Comp. Stat., 1911, p. 1558; 36 Stat. L. 593.

well-known fact that a navigable body of water may have its capacity for navigation partially, or even wholly destroyed by the diversion of the waters of its tributaries. This is especially true where the diversion is for the purpose of irrigating lands, where a great portion of the water is consumed. In fact, this has been the experience with a number of the navigable rivers of the western portion of this country where a great deal of the waters of the upper portion of the rivers themselves and their tributaries have been taken out from their natural channels for the purpose mentioned. That the taking the water out of the tributaries reduces the flow of the water in the main stream is a fact too well known to need discussion here. This fact is also generally recognized by all of the States, where the law of appropriation is in force, and where it is held that the appropriation of the waters of a stream for the purpose of irrigation is an appropriation of the tributaries of the stream to the full extent of the original appropriation, and that later comers can not take the water of the tributaries of the stream to the injury of the prior appropriator of the main stream.⁶

Under the statutes of the United States as they are now in force, and as the same are construed by the courts, the irrigation interests, as developed under the laws of the separate States, are not only threatened with serious impairment of their progress in the future, but also interests already in existence are threatened. It must be conceded, as was held by the Supreme Court of the United States, in *United States v. Rio Grande Dam & Irrigation Co.*, that the jurisdiction of the general Government over interstate commerce and its natural highways vests in Congress the right to take all needed measures to preserve the navigability of the navigable water courses of the United States, *even against any State action*. There was also another point decided by the court in the case and that was, that in the absence of specific authority from Congress a State can not by its legislation destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters; so far at least, as may be necessary for the beneficial uses of the Government property; thus holding that the Government could maintain the common law theory as to the flow of the waters in a stream, where the Government itself was a riparian owner, although by the law of the State an appropriation and diversion of

⁶ See *Appropriation from Tributaries*, Sec. 649.

the waters of the stream could be made. These doctrines were again reiterated in a second appeal of the same case, and again in the case of *Kansas v. Colorado*, as being powers granted to Congress under the Constitution for the protection of the navigability of the navigable waters of the United States.⁷ And, in the first decision rendered by the Court in the Rio Grande dam case, the Court held that the Acts of Congress, which permit the appropriation of waters,⁸ in aid of the mining industries and for the reclamation of lands, do not authorize the appropriation of the waters of the source of navigable streams above the point of navigability, to such an extent as to destroy or seriously injure their navigability; and, further, the Court, by Mr. Justice Brewer, upon the subject of appropriating waters from the tributaries of navigable streams, said: "To hold that Congress, by these Acts, meant to confer upon any State the right to appropriate all the waters of the tributary streams which unite into a navigable water course in derogation of the interests of all the people of the United States, is a construction which can not be tolerated. It ignores the spirit of the legislation and carries the statute to the verge of the letter and far beyond what under the circumstances of the case must be held to be the intent of Congress." The Court also held that in such a case it would be the right of the Attorney General to institute proceedings to enjoin such an appropriation. Also in the *Kansas v. Colorado* case Mr. Justice Brewer, for the Court, also stated: "If, in the present case, the National Government was asserting, as against either Kansas or Colorado, that the appropriation for the purposes of irrigation of the waters of the Arkansas was affecting the navigability of the stream, it would become our duty to determine the truth of the charge."

⁷ See Const. of U. S., Art. 1, Sec. 8, Cls. 2, 4, 17; Sec. 9, Cl. 5; Sec. 10, Cl. 2; Art. 6, Cl. 1; *U. S. v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; same case on second appeal, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

See, also, Secs. 348-353; *Union Bridge Co. v. U. S.*, 204 U. S. 364, 51 L. Ed. 523, 27 Sup. Ct. Rep. 367, and cases cited; *Montgomery v. Portland*, 190 U. S. 89, 47 L. Ed. 965, 23 Sup. Ct. Rep. 735.

See, also, as to Government as riparian owner, Sec. 480.

⁸ For a review of these statutes, see Sec. 354.

The conclusions which must be drawn from the present state of our Federal statute laws, and as the same have been construed by the Supreme Court of the United States, are irresistible to the effect that any interference of whatsoever nature with the waters of a river, or other body of water, which are public navigable waters of the United States, whereby the navigable capacity of the water is destroyed or injured may be enjoined by the Government and all obstacles to the natural flow of the water may be removed; and that, too, whether the interference and obstacles are at a point where the water is itself navigable, or higher up above the point of navigability, or are on the tributary streams which go to make the navigable body of water or water course. In a recent Act of Congress,⁹ wherein it is provided for the purchase of lands along the watersheds of navigable streams in order, by way of conserving the forests to also conserve the navigable capacity of navigable streams, Congress has definitely asserted its right to the waters on such lands. By Section 10 it is provided: "And no right, title, interest, or claim in or to any lands acquired under this Act, *or the waters thereon*, or the products, resources, or use thereof after such lands have been so acquired, shall be initiated or perfected, except as in this section provided." And the section in no way provides whereby the right to waters or their use may be acquired by private parties. This Act is general in its effect and applies to the Eastern and Western portions of the country.

§ 356. Right to use water from navigable streams for irrigation.—As the converse to the proposition that the flow of water of the navigable streams of the United States must not be interfered with, where that interference tends to injure or destroy the navigable capacity thereof, as discussed in previous sections,¹ the waters of any navigable stream may be appropriated and used for beneficial purposes, where the laws of the States wherein the appropriation is made permit the same and the appropriation does not tend to interfere with the navigable capacity of the stream.² This,

⁹ See Act of March 1, 1911, Public, No. 435; U. S. Comp. Stat. Supp. 1911, p. 652; 36 Stat. L. 961.

For the provisions of the Act, see Sec. 422.

¹ See Secs. 349-354.

² See what waters may be appropriated, Secs. 641-669.

of course, includes an appropriation for the purpose of irrigating lands.³ But as to the navigable waters of the United States, this right of appropriation for irrigation is limited to the superior power of the general Government to preserve uninjured the navigable capacity of those waters.⁴ But, upon the other hand, if the diversion of the waters of these rivers, or their tributaries, in no way impairs the right that the public have of navigating them, there is no doubt but that the water may be diverted from a navigable river for irrigation, or any other useful purpose.⁵ The navigable waters of a State, as distinguished from those of the United States,⁶ are wholly under the jurisdiction of the State wherein they are found. It is entirely within the powers of the legislature of the State to preserve these waters for navigation; or, provided their diversion does not interfere with the navigable capacity of navigable waters of the United States, within the ruling of the Rio Grande dam case,⁷ these waters may be diverted and used for the irrigation of lands.⁸

§ 357. Diversion of water in public streams for navigation.—The State, or public, has no right, at common law, to divert the waters from one public stream for the purpose of aiding navigation

³ U. S. v. Rio Grande Dam & Irr. Co., 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770, where Mr. Justice Brewer, in referring to the Acts of Congress authorizing the appropriation of water for mining and irrigation purposes in derogation of the common law rule, said: "This legislation must be interpreted in the light of existing facts—that all through the mining region in the West were streams not navigable, *whose waters could safely be appropriated* for mining and agricultural industries, *without serious interference* with the navigability of the rivers into which these waters flow." And the Court further held that the navigable capacity of navigable rivers must not be interfered with, by the interference with the waters of the upper portions of the rivers or their tributaries.

As to the Acts of Congress referred to, see discussion in Secs. 347-352.

⁴ U. S. v. Rio Grande Dam & Irr. Co., *supra*, also, *Id.*, 2d appeal, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428.

⁵ Barrett v. Metcalf, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758; Miller v. Enterprise Co., 142 Cal. 208, 75 Pac. Rep. 770; Heilbron v. Fowler Switch Canal Co., 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183.

⁶ For distinction, see Sec. 348.

⁷ See *supra*.

⁸ Even in order to preserve the navigable waters of a State, the public must have an access to these waters. Bolsa Land Co. v. Burdick, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275.

As for right of access, see Sec. 344.

in another stream, or in a canal, where such diversion injures the rights of the riparian owners below. The State has no greater right in this respect than a private owner, and one of the fundamental rules of the common law is that an upper riparian owner has no right to consume or divert the water to the injury of the lower riparian owners. However, we find that even in the early history of the country it has been a common practice to divert the water from one stream for the purpose of aiding the navigation of another, or for the purpose of entirely supplying canals constructed for the sole purpose of navigation. Hence, it follows that in those States which have most strenuously followed the common law theories of waters, there must have been a modification of the common law to that extent.¹ But the rule is that the State is liable to the lower riparian owners if it takes water from a stream for supplying a canal.² We find, however, that some States have gone to a much further extent, and hold that the right of a State to improve a stream as a highway, and for the purpose of aiding its navigation, is superior to the rights of riparian owners, and it may take and divert, absolutely without compensation, so much of the water of a stream as may be required to improve its navigation.³ This is upon the theory that a State is the owner of the water itself; but, as we have seen, neither the State nor an individual can be the absolute owner of the water of a stream,⁴ but that the extent of the ownership is a right to its use. Of course, the right of navigation being a public use, the State may acquire the right to divert the water of a stream and turn it either into

¹ For common law theories of riparian rights, see Secs. 450-551; *Lakeside Paper Co. v. State*, 45 App. Div. 112, 60 N. Y. Supp. 1081.

² *Lakeside Paper Co. v. State*, *supra*.

³ *Patten Paper Co. v. Kaukauna Water Power Co.*, 90 Wis. 370, 61 N. W. Rep. 1121, 63 N. W. Rep. 1019, 28 L. R. A. 443, 48 Am. St. Rep. 945; see, also, *Id.*, 142 U. S. 254, 35 L. Ed. 1004, 12 Sup. Ct. Rep. 173; *Black*

River Imp. Co. v. La Crosse Booming & Transp. Co., 54 Wis. 659, 11 N. W. Rep. 443, 41 Am. Rep. 66; *Homochitto River v. Withers*, 29 Miss. 21, 64 Am. Dec. 126; *Aff'd*, 20 How. 84 U. S., 15 L. Ed. 816; *Cameron Furnace Co. v. Pennsylvania Canal Co.*, 2 Pearson 208; *People v. Tibbetts*, 19 N. Y. 523; *Crill v. Rome*, 47 How. Pr. 398.

⁴ As to the ownership of water, see Secs. 288, 289, 333.

another stream to aid in its navigation, or into a canal constructed for that purpose, by eminent domain, upon payment to the owners of just compensation.⁵

⁵ *Lakeside Paper Co. v. State*, 45 App. Div. 112, 60 N. Y. Supp. 1081; *Herron v. Rathmines & R. Imp. Comrs.*, A. C. 498, 67 L. T. N. S. 658, where the Court held that the water of a

stream could be diverted for the purposes of a canal, provided that compensation reservoirs were constructed for the benefit of the riparian owners.

CHAPTER 17.

RIGHT OF FISHING AND HUNTING.

- § 358. Scope of chapter.
- § 359. In general—Property in fish and game.
- § 360. Public right—Under common law.
- § 361. Public right—General rule in the United States.
- § 362. Public right—Power of legislature to make rule.
- § 363. Public right—State grant of exclusive privileges.
- § 364. Public right—Limited by prescription.
- § 365. Private—Riparian rights.
- § 366. Right where declaration is made that waters are public.
- § 367. Right where declaration is made that waters are public—Hartman v. Tresise.
- § 368. Exclusive right of fishing and hunting clubs.
- § 369. Police powers of a State to regulate and protect fishing and hunting.
- § 370. Police powers of a State to regulate obstructions in streams.
- § 371. Destruction of fish by means of irrigation ditches.

§ 358. **Scope of chapter.**—In order to have this subject together we will discuss the right of fishing and hunting, or fowling, in and on both the public and private waters of this country. The right of the general public and the right of the individual to fish and hunt will be discussed. And in this chapter we will discuss the right of the riparian owners, although this latter strictly belongs to the subject of riparian rights, which right will be discussed in another chapter.¹ Herein we will also take up the subject of fishing and hunting clubs, especially as to their right to maintain exclusive reservations of waters for that purpose.²

§ 359. **In general—Property in fish and game.**—There is no difference in principle and authority between fishing and hunting in or on waters. The right to hunt the wild fowl and all game which inhabit or fly over the surface of the waters is as valuable to the individual as his right to fish in these waters. The authorities, which sustain and protect him in the exercise of the one, may also be invoked with equal force as to the other. As was said

¹ For riparian rights, see Chaps. 21-28, Secs. 450-551.

See, also, Sec. 365.

² See Sec. 368.

by the Supreme Court of Michigan in the case of *Ainsworth v. Munoskong Hunting and Fishing Club*,¹ "We are unable to draw any distinction between them."² According to all the elementary civil and common law writers, fish and game being wild animals, their ownership, so far as they are capable of ownership, is in the State for the benefit of all of its people in common, and no private person has any interest whatever in any of the wild creatures of the earth, air, or water, until he has taken them into his own possession, dead or alive.³ The general common law right of fishing was taken from the civil law. The fish swimming at large under the civil law belong to the negative community, that is, to no one; they are "*ferae naturae*."⁴ The natural right to fish and hunt exists in every individual, except so far as restrained by provisions of law,⁵ and one who has captured any fish or wild bird or animal becomes the owner thereof.⁶

§ 360. **Public right—Under common law.**—Under the common law, as enforced in England at the present time, the general public have, *prima facie*, a common right of fishing and hunting, or fowling, in all tidal waters, or, in other words, all waters the title

¹ 153 Mich. 185, 116 N. W. Rep. 992.

² See, also, *State v. St. Clair F. & S. Club*, 127 Mich. 580, 87 N. W. Rep. 117; *Lincoln v. Davis*, 53 Mich. 375, 19 N. W. Rep. 103, 51 Am. Rep. 116.

³ *Geer v. State*, 161 U. S. 519, 40 L. Ed. 793, 16 Sup. Ct. Rep. 600, affirming 61 Conn. 144, 22 Atl. Rep. 1012, 13 L. R. A. 804, 3 Inters. Com. Rep. 732, and cases cited.

⁴ The fish in the sea, rivers, lakes, and other natural bodies of water, being in their natural freedom, are things which belong to no one; the fisherman acquires the property in the fish only which he catches and reduces to possession. Pothier, *Traité du droit de Propriété*. *Opera*, Tom. 8, p. 137; Shultes on Aquatic Rights, p. 1.

See, also, the case of *Swans*, 7 Cole Rep. 15b, 77 Eng. Reprint 435; 11 Blackstone Com. 395.

That running waters also belong to the negative community at civil law, see Sec. 288.

See, also, *State v. Mallory*, 73 Ark. 236, 83 S. W. Rep. 955, 67 L. R. A. 773; *Ex parte Kenneke*, 136 Cal. 527, 69 Pac. Rep. 261, 89 Am. St. Rep. 177; *Cummings v. People*, 211 Ill. 392, 71 N. E. Rep. 1031; *American Express Co. v. People*, 133 Ill. 649, 24 N. E. Rep. 758, 9 L. R. A. 138, 23 Am. St. Rep. 641; *State v. Gallop*, 126 N. C. 979, 35 S. E. Rep. 180; *Ex parte Maier*, 103 Cal. 476, 37 Pac. Rep. 402, 42 Am. St. Rep. 129; *State v. Repp*, 104 Iowa 305, 73 N. W. Rep. 829, 40 L. R. A. 687.

⁵ 2 Blackstone Com. 403.

⁶ *Id.*; *Churchward v. Studdy*, 14 East. 249, 104 Eng. Rep. F. R. 596; *Taber v. Jenny*, 1 Sprague (U. S.), 315, 23 Fed. Cas. No. 13,720; *Ghen v. Rich*, 8 Fed. Rep. 159.

to the soil under which is in the Crown.¹ In this country the rule as to all tidal waters is the same as in England, and no one can maintain an exclusive privilege to fish or fowl in any portion of such waters unless he has acquired it by grant or prescription.² In fact, under a strict construction of the common law rule, the right to fish in, or to hunt on certain waters, in the absence of grants or prescription, is in harmony with the ownership of the soil under those waters; if the title to the soil is in the State, the right to fish or hunt is in the public; but, upon the other hand, if the title to the soil is in the riparian owner, he has this right.³ Again, under the common law, as we have seen, the title to the soil under non-tidal, although in fact navigable, waters is in the riparian owners;⁴

1 For title to the soil under tidal waters, see Secs. 325, 326; *Murphy v. Ryan*, Ir. Rep. 2 C. L. 143, 16 Week. Rep. 678; *Royal Fishery of the Banne, Davies*, 149; *Carter v. Murcot*, 4 Burr. 2162; *Regis v. Stimpson*, 32 L. J. M. C. N. S. 208, 4 Best & S. 207, 9 Cox C. C. 356, 10 Jur. N. S. 41; 16 Vin. Abr., Title Piscary (B); *Woolrych on Waters*, p. 76; *Schultes Aquatic Rights*, 17; *Angell on Water Courses*, Sec. 65a; 3 Kent Com. 412, 413; *Malcolmson v. O'Dea*, 10 H. L. Cas. 593, 9 Jur. N. S. 1135, 9 L. T. N. S. 93, 12 Week. Rep. 178.

2 For authority of State to grant special privileges, see Sec. 368; *Weston v. Sampson*, 8 Cush. 347, 54 Am. Dec. 764; *Wooley v. Campbell*, 37 N. J. L. 163; *Parker v. The Cutler Mill-Dam Co.*, 20 Me. 353, 37 Am. Dec. 56.

Browne v. Kennedy, 5 Harr. & J. (Md.) 195, 9 Am. Dec. 503; *Moulton v. Libbey*, 37 Me. 472; *Collins v. Benbury*, 25 N. C. (3 Ired. L.) 277, 38 Am. Dec. 722; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, Rev'g, 16 Fed. Rep. 823.

3 See rights of riparian owners to fish and hunt, Sec. 365.

See, also, irrigation as interfering with fishing and hunting, Secs. 370, 371; *Legoe v. Chicago Fishing Co.*, 24 Wash. 175, 64 Pac. Rep. 141; *Mendota Club v. Anderson*, 101 Wis. 479, 78 N. W. Rep. 185; *DeMers v. Sandy Spit Fish Co.*, 24 Wash. 584, 64 Pac. Rep. 799; *Diana Shooting Club v. Lamoreaux*, 114 Wis. 44, 89 N. W. Rep. 880, 91 Am. St. Rep. 898; *Sterling v. Jackson*, 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405; *People v. Collison*, 85 Mich. 105, 48 N. W. Rep. 292; *Niles v. Cedar Point Club*, 85 Fed. Rep. 45, 29 C. C. A. 5, 54 U. S. App. 668; *Slingerland v. International Contracting Co.*, 43 App. Div. 215, 60 N. Y. Supp. 12; *Gerhard v. Worrell*, 20 Wash. 492, 55 Pac. Rep. 625; *Ne-pee-nauk Club v. Wilson*, 96 Wis. 290, 71 N. W. Rep. 661; *Schulte v. Warren*, 218 Ill. 108, 71 N. W. Rep. 661, 75 N. W. Rep. 783; *Bolsa Land Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275; *State v. Lake St. Clair Shooting Club*, 127 Mich. 580, 87 N. W. Rep. 117; *Hittinger v. Eames*, 121 Mass. 539; *West Roxbury v. Stoddard*, 7 Allen (Mass.) 158.

4 See Sec. 328; *Adams v. Pease*, 2 Conn. 481; *Chenango Bridge Co. v.*

and the owners also have the exclusive right of fishing in these waters.⁵ This, as we shall see, is not the rule in the United States in the case of navigable nontidal rivers, except in those States which follow strictly the common law rule.⁶ In this country, in the case of waters nontidal, but navigable in fact,⁷ the right to fish and fowl is generally in the public, irrespective of the technical ownership of the bed.⁸

§ 361. Public right—General rule in the United States.—The general rule in this country is that the right of hunting and fishing by all the members of the public is not confined to tidal waters, but has been extended to all of the public waters of the country, which, as we have seen, are those waters that are navigable in fact.¹ The strict construction of the common law has not been followed to any great extent as to this right, except as to tidal waters;² and, in general, the public have this right, irrespective of the ownership of the bed over which these waters flow.³ This right, however, is subject to the paramount right of navigation.⁴

Paige, 83 N. Y. 178, 38 Am. Rep. 407; Atty. Gen. *ex rel.* Muskegon Boom Co. v. Evert Boom Co., 34 Mich. 462; June v. Purcell, 36 Ohio St. 396; McFarlin v. Essex Co., 10 Cush. 304.

⁵ McFarlin v. Essex Co., 10 Cush. 304, where the Court held, that in all waters, not navigable, in the common law sense, that is to say not subject to tidal influence, the right of fishery is in the owner of the soil upon which it is carried on, and in such rivers the right of the soil is in the owners of the land bounding upon it, although it might in fact be navigable. Waters v. Lilly, 4 Pick. 145, 16 Am. Dec. 333; Commonwealth v. Chapin, 5 Pick. 199, 16 Am. Dec. 386.

In Lincoln v. Davis, 53 Mich. 375, 19 N. W. Rep. 103, 51 Am. Rep. 116, it was held that the riparian proprietors upon all fresh water streams had the exclusive right of fishing opposite their land.

See, also, Hart v. Hill, 1 Whart.

124; Beckman v. Kreamer, 43 Ill. 447, 19 Am. Dec. 146; Gould on Waters, Sec. 182.

⁶ See Sec. 361.

⁷ For what constitutes navigable waters, see Secs. 343-346.

⁸ See Sec. 361.

¹ For definition of public waters, see Sec. 290.

As to what constitutes navigable waters, see Secs. 343-346.

² See Sec. 343.

³ Willow River Club v. Wade, 100 Wis. 86, 76 N. W. Rep. 273, 42 L. R. A. 305, where the plaintiff owned the land on both banks of the stream, and hence owned the bed of the stream, it was held that the public had the right to fish. Smith v. Rochester, 92 N. Y. 463, 44 Am. Rep. 393; State v. St. Clair F. & S. Club, 127 Mich. 580, 87 N. W. Rep. 117; Bodi v. Winous Point Shooting Club, 57 Ohio 226, 48 N. E. Rep. 944; Sloan v. Biemiller, 34 Ohio St. 492; Hardin v. Jordan, 140 U.

There are certain exceptions to the general rule which modify the right of the general public in this respect. These exceptions may be denominated as: Legislative enactment changing the rule in certain States;⁵ exclusive rights granted to individuals or corporations on a portion of these waters;⁶ and prescription.⁷ With these exceptions it may be said that if the public have the right to pass over the waters of this country by the ordinary modes of navigation, not in aid of commerce merely, but also for pleasure,⁸ and have the right of access for that purpose,⁹ they have also the right to take fish in those waters by any way common to all, and permitted under the laws of the State wherein those waters are situated. The public have the right to kill or capture ducks or other wild fowl, resting or feeding on navigable waters, or flying over them. They have the right to call such wild fowl by all the devices known to sportsmen and not prohibited by statute, from the air or land, upon or over these public waters, and there, in the

S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838; Rev'g, 16 Fed. Rep. 823; Ne-pee-nauk Club v. Wilson, 96 Wis. 290, 71 N. W. Rep. 661; Bickel v. Polk, 5 Harr. (Del.) 325; Moulton v. Libbey, 37 Me. 472, 59 Am. Dec. 57; Wilson v. Inloes, 6 Gill. 121; Hogg v. Beerman, 41 Ohio St. 81, 52 Am. Rep. 71.

The dissenting opinion of Campbell, J., and Morse, J., in *Sterling v. Jackson*, 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405, was later, in 1901, adopted and quoted with approval by the Supreme Court of Michigan in *State v. St. Clair F. & S. Club*, 127 Mich. 580, 87 N. W. Rep. 117.

See, also, *Commonwealth v. Hilton*, 174 Mass. 29, 54 N. E. Rep. 362, 45 L. R. A. 475; *Packard v. Ryder*, 144 Mass. 440, 11 N. E. Rep. 578, 59 Am. Rep. 101; *Lincoln v. Davis*, 53 Mich. 375, 19 N. W. Rep. 103, 51 Am. Rep. 116; *Morris v. Graham*, 16 Wash. 343, 47 Pac. Rep. 752, 58 Am. St. Rep. 33; *Wright v. Mulvaney*, 78 Wis. 89, 46 N. W. Rep. 1045, 9 L. R. A. 807, 23

Am. St. Rep. 393; *Lawton v. Steele*, 152 U. S. 133, 38 L. Ed. 385, 14 Sup. Ct. Rep. 499; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997, 18 N. J. L. 495.

⁴ *Lewis v. Keeling*, 46 N. C. 299, 62 Am. Dec. 168; *Wright v. Mulvaney*, 78 Wis. 89, 46 N. W. Rep. 1045, 23 Am. St. Rep. 393, 9 L. R. A. 807; *Colchester v. Brooke*, 7 Q. B. 339, 9 Jur. 1090, 15 L. J. Q. B. 59, 53 E. C. L. 339.

⁵ See Sec. 362.

⁶ See Sec. 363.

⁷ See Sec. 364.

⁸ See navigation for pleasure, Sec. 345.

⁹ For the right of access, see Secs. 335, 336.

See *Bolsa etc. Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A., N. S. 275, holding that a lawful mode of access must be obtained by the public before the right may be exercised.

seasons allowed by the statute, to kill or capture the same.¹⁰ But, upon the other hand, where the waters are not navigable in fact, but are what are known as private waters, there is no question but that the riparian owners have the exclusive right of fishing and hunting, not as a privilege, but as a property right.¹¹ But in a recent case decided by the Supreme Court of the United States it was held that the Government, by a treaty with the Indians, had the power to reserve to them the right of fishing and hunting, as against the rights of subsequent grantees upon the banks of the stream.¹² The Court, by Mr. Justice McKenna, said: "The extinguishment of the Indian title, opening the land for settlement, and preparing the way for future States, were appropriate to the objects for which the United States held the territory. And surely it was within the competency of the Nation to secure to the Indians such a remnant of the great rights they possessed as 'taking fish at all usual and accustomed places.' " But the Court further held that the State had the power to make all reasonable regulations as to the method of taking the fish.

§ 362. Public right—Power of legislature to make rule.—We have seen in a previous section that it was within the power of the legislature of a State to adopt either rule as to whether the title to the soil under navigable or public streams should be in the State or should vest in the riparian owner.¹ In the case of *Barney v. Keokuk*,² the Supreme Court of the United States held that the beds of all streams navigable in fact vested in the new States upon their admission into the Union, and that "if they choose to resign to the riparian proprietor rights which properly belong to them in their sovereign capacity, it is not for others to raise objections." So, also, we can say that the right to fish and hunt in or on these waters is largely left to the laws adopted in the respective States.³ As we have seen, the strict rule of the common

¹⁰ See cases cited in last note.

¹¹ For riparian rights as to fishing and hunting, see Sec. 365; *Jackson v. Lewis*, Cheves L. 259; *Waters v. Lilly*, 4 Pick. 145, 16 Am. Dec. 333.

¹² *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662.

¹ See Secs. 329, 330.

² 94 U. S. 324, 24 L. Ed. 224.

³ See *Right of Riparian Owner to Fish*, Sec. 365; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Illinois Cent. R. Co. v. Chicago*, 173 Ill. 471, 50 N. E. Rep. 1104, 53 L. R. A. 408;

law has not been adopted in many of the States as to the ownership of the soil under these waters,⁴ and hence it follows that the common law rule as to the fisheries in these waters has not always been followed. In fact, different rules have been adopted in different States relative to public fishing in nontidal waters, which at times are not consistent with the common law rule, or with each other. In Wisconsin, it is held that fishing in a navigable river against the protest of the owner of the bed and banks of the stream is not trespass.⁵ And in the State of Washington, the right of fishing remains in the owner of the bank of a navigable stream, although he does not own the bed; and it is held that the public have only an easement over the streams, and that the taking of fish therefrom would be trespass against the riparian proprietor.⁶ It is even settled that the right of regulation and control of the fishing and hunting by the several States in the interest of the public, permits, in any State, legislation that secures the benefits of this public right to its own inhabitants only, upon the ground that the rights, immunities, and privileges which are secured by the Constitution of the United States to the inhabitants of the several States do not include, in favor of the inhabitants of any State, rights in the common property of other States.⁷ The legislature of a State may, as was held in a Michigan case, dedicate a portion of its public waters as a public fishing and hunting ground, and prohibit acts which would tend to injure the purpose for which the dedication was made.⁸ Or, as was held in California, the

Martin v. Waddell, 41 U. S. 16 Pet. 367, 10 L. Ed. 997.

See, also, as to police power of States, Sec. 369; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838; *rev'g* 16 Fed. Rep. 823; *Willow River Club v. Wade*, 100 Wis. 86, 76 N. W. Rep. 273, 42 L. R. A. 305; *Commonwealth v. Hilton*, 174 Mass. 429, 54 N. E. Rep. 362, 45 L. R. A. 475.

⁴ See Sec. 330.

⁵ *Willow River Club v. Wade*, 100 Wis. 86, 76 N. W. Rep. 273, 42 L. R. A. 305, where the Court followed the rule of navigability.

³⁹—Vol. I—Kin. on Irr.

⁶ *Griffith v. Holman*, 23 Wash. 347, 63 Pac. Rep. 239, 54 L. R. A. 178.

⁷ *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *Wharton v. Wise*, 153 U. S. 155, 38 L. Ed. 669, 14 Sup. Ct. Rep. 783; *Corfield v. Coryell*, 4 Wash. C. C. 371, Fed. Cas. No. 3230; *Blake v. McClung*, 172 U. S. 239, 43 L. Ed. 432, 19 Sup. Ct. Rep. 165; *Commonwealth v. Hilton*, 174 Mass. 29, 54 N. E. Rep. 362, 45 L. R. A. 475.

⁸ *People v. Silberwood*, 110 Mich. 103, 67 N. W. Rep. 1087, 32 L. R. A. 694; *Atty. Gen. v. Burrell*, 31 Mich. 25; *Sterling v. Jackson*, 69 Mich. 488,

State, always, of course, subject to the paramount control of the general Government touching matters of navigation and commerce, has the right to sell into private ownership any of these water-covered lands, the limitation upon its power in this regard being that such sales shall be in aid of, at least not in derogation of, its trust to preserve the navigable waters for the use of the public.⁹

Hence it follows that the rights of the public to fishing in the public inland streams and other bodies of water are fixed by the rule of law adopted in each State, regardless of the questions of navigability or ownership of the soil under the waters. Where the waters are not navigable in fact there is no dispute that the riparian owners have the exclusive right.¹⁰

§ 363. **Public right—State grants of exclusive privileges.**—In England, under the common law, at first the Crown had the right to grant exclusive rights to the fishing and hunting in and on certain portions of the public waters. This was considered a perquisite of the Crown, to be used and disposed of for his benefit.¹ But later, this right was vested in Parliament by Magna Charta, and since that time, by the weight of authority, the Crown has no power to grant exclusive rights in fishing and hunting in the public waters, which, as we have seen in that country, are only the tidal and navigable waters.² In this country, when the American Colo-

37 N. W. Rep. 845, 13 Am. St. Rep. 405.

⁹ *Bolsa Land Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 12 L. R. A. N. S. 275.

See, also, *Public Right of Navigation*, Secs. 342, 343.

¹⁰ See the rights of riparian owners, Sec. 365; *Jackson v. Lewis*, Cheves L. 259; *Waters v. Lilly*, 4 Pick. 145, 16 Am. Dec. 333.

¹ *Royal Fisheries of the Banne*, Davies, 149; *Bracton*, Lib. 2, Chap. 12; *Freeman*, *English Const.*, 2d Ed., p. 139; *Malcomson v. O'Dea*, 10 H. L. Cas. 593, 9 Jur. N. S. 1135, 9 L. T. N. S. 93, 12 Week. Rep. 178.

² See Secs. 325, 360; *Carlisle v. Graham*, L. R. 4 Exch. 361, 38 L. J.

Exch. 226, 21 L. T. Rep. N. S. 133, 18 Week. Rep. 318; *Somerset v. Fogwell*, 5 B. & C. 875, 8 D. & R. 747, 5 L. J. K. B. O. S. 49, 29 Rev. Rep. 449, E. C. L. R. Vol. II, 719; *Meisner v. Fanning*, 3 Nova Scotia 97; *Commonwealth v. Hilton*, 174 Mass. 29, 54 N. E. Rep. 362, 45 L. R. A. 475; *Tinicum Fishing Co. v. Carter*, 61 Pa. St. (11 P. F. Smith) 21, 100 Am. Dec. 597; *Neill v. Devonshire*, 8 App. Cas. 153, 31 Week. Rep. 622; *Northumberland v. Houghton*, L. R. 5 Exch. 127, 39 L. J. Exch. 66, 22 L. T. N. S. 491, 18 Week. Rep. 495; *Malcolmson v. O'Dea*, 10 H. L. Cas. 593, 9 Jur. N. S. 1135, 9 L. T. Rep. N. S. 653.

By some authorities, however, it is held that Magna Charta had no effect,

nies revolted and acquired their freedom, they acquired all the powers, not only of the Crown, but also of Parliament. These rights were granted in the colonial charters, to be held for the benefit of the inhabitants; and, when the Government was formed, they remained in the several States then forming the Union, and were granted to those States which were afterward admitted.³ Hence it follows that the several States of this country, by their legislatures, have the power, unless restricted by their respective constitutions, to grant several or exclusive rights of fishing and hunting in or on a portion of the public waters within their jurisdictions.⁴ The grant of this right, however, is subject to the paramount rights of navigation.⁵ Such a grant must be strictly

and that the Crown may grant an exclusive right of fishery. *Brookhaven v. Strong*, 60 N. Y. 56; *Rogers v. Jones*, 1 Wend. (N. Y.) 237, 19 Am. Dec. 493; *Matter of Provincial Fisheries*, 26 Can. Sup. Ct. 444.

³ *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *Dill v. Wareham*, 7 Met. 438; *Commonwealth v. Alger*, 7 Cush. 53; *Weston v. Sampson*, 8 Cush. 347, 54 Am. Dec. 764; *Pollard v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565; *Smith v. Maryland*, 59 U. S. 18 How. 71, 15 L. Ed. 269; *Manchester v. Massachusetts*, 139 U. S. 240, 35 L. Ed. 159, 11 Sup. Ct. Rep. 559; *Arnold v. Mundy*, 6 N. J. L. (1 Holst.) 1, 10 Am. Dec. 356; *Commonwealth v. Hilton*, 174 Mass. 29, 54 N. E. Rep. 362, 45 L. R. A. 475.

For exclusive rights of fishing and hunting clubs, see Sec. 368.

For title to soil under navigable waters, see Secs. 329, 330.

⁴ *Heckman v. Swett*, 107 Cal. 276, 40 Pac. Rep. 420, aff'g 99 Cal. 303, 33 Pac. Rep. 1099; *Commonwealth v. Weatherhead*, 100 Mass. 175; *Stanard v. Hubbard*, 34 Conn. 370; *Munson v. Baldwin*, 7 Conn. 168; *Halleck*

v. Davis, 22 Wash. 393, 60 Pac. Rep. 1116; *Adams v. Pease*, 2 Conn. 481; *Walker v. Stone*, 17 Wash. 578, 50 Pac. Rep. 488; *Preble v. Brown*, 47 Me. 284; *Moulton v. Libbey*, 37 Me. 472, 59 Am. Dec. 57; *Rowe v. Smith*, 48 Conn. 444; *Commonwealth v. Vincent*, 108 Mass. 441; *Proctor v. Wells*, 103 Mass. 216; *Wooley v. Campbell*, 37 N. J. L. 163; *Brookhaven v. Strong*, 60 N. Y. 56; *Rogers v. Jones*, 1 Wend. 237, 19 Am. Dec. 493.

Held contrary to the Constitution of New York in *Slingerhead v. International Con. Co.*, 43 N. Y. App. Div. 215, 60 N. Y. Supp. 12.

See, also, *Fagan v. Armistead*, 33 N. C. 433; *Jones v. Jones*, 2 N. C. 488; *Halleck v. Davis*, 22 Wash. 393, 60 Pac. Rep. 1116; *Walker v. Stone*, 17 Wash. 578, 50 Pac. Rep. 488; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Dammon v. Hawaii*, 194 U. S. 154, 48 L. Ed. 916, 24 Sup. Ct. Rep. 617; *Russell v. Association of the Jersey Co.*, 56 U. S. 15 How. 426, 14 L. Ed. 757; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997, 18 N. J. L. 495.

⁵ For paramount right of navigation, see Sec. 349; *Sterling v. Jack-*

construed, and an intention to part with any portion of the right of the public will not be presumed unless it was clearly the intent to make such a grant.⁶ In fact, in all public waters, whether within or beyond the ebb and flow of the tide, there can be no restriction upon the authority of a State, other than that of its own constitution, to regulate the public right of fishing and hunting in or on these waters, or to make grants of exclusive rights, which do not impair other rights already vested, either public or private.⁷ And, of course, it must follow that where these grants are valid the general public will be excluded from fishing or hunting in or on these waters.

§ 364. Public right—Limited by prescription.—The unorganized public can not acquire the right of fishing or hunting either by grant or prescription, since the public can not prescribe or accept a grant.¹ Upon the other hand, the public right to hunting and fishing may be limited by a prescriptive right of an individual in navigable public waters, which may be acquired by the long, exclusive, and uninterrupted enjoyment of such right.² But this

son, 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405, that a grant by the State of Michigan was valid, subject only to the right of the public to navigate the waters, and that the plaintiff had the exclusive right to use the waters of a bay for fowling purposes. But see *State v. St. Clair F. & S. Club*, 127 Mich. 580, 87 N. W. Rep. 117.

See, also, *Post v. Munn*, 4 N. J. L. 61, 7 Am. Dec. 570; *Brookhaven v. Strong*, 60 N. Y. 56; *Rogers v. Jones*, 1 Wend. 237, 19 Am. Dec. 493; *Colchester v. Brooke*, 7 Q. B. 339, 9 Jur. 1090, 15 L. J. Q. B. 59, 53 E. C. L. 339; *Beatty v. Davis*, 20 Ont. 373.

⁶ *Sutter v. Heckman*, 1 Alaska 81; *Moulton v. Libbey*, 37 Me. 472, 59 Am. Dec. 57; *Lowndes v. Dickerson*, 34 Barb. (N. Y.) 586; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997, 18 N. J. L. 495; *Brink v. Richtmyer*, 14 Johns. (N. Y.) 255;

Hierlihy v. Loggie, 8 N. Brunsw. 204; *Wilson v. Codyre*, 27 N. Brunsw. 320; *Johnson v. Bloomfield, Jr.* R. 8 C. L. 88.

⁷ *Commonwealth v. Hilton*, 174 Mass. 29, 54 N. E. Rep. 362, 45 L. R. A. 475; *Nickerson v. Bracket*, 10 Mass. 212; *Russell v. Russell*, 15 Gray 159; *Arnold v. Munday*, 6 N. J. L. (1 Holst.), 10 Am. Dec. 356; *Brown v. De Groff*, 50 N. J. L. 409, 14 Atl. Rep. 219, 7 Am. St. Rep. 794.

As to exclusive rights of fishing and hunting clubs, see Sec. 368.

¹ *Turner v. Hebron*, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386; *Rogers v. Benton*, L. R. Q. B. 26; *Merwin v. Wheeler*, 41 Conn. 23; *Pearsall v. Post*, 22 Wend. 425.

² *Turner v. Hebron*, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386; *Chalker v. Dickinson*, 1 Conn. 382, 6 Am. Dec. 250; *Carter v. Murcot*, 4 Burr. 2162, 98 Eng. Rep. F. B. 127;

right, being based upon the supposition that a previous grant has been made, every presumption is against it, and in order to maintain such a right it must be clearly proved.³ And it must appear in the evidence that all others have been kept out of the place claimed for the exclusive right by the claimant and his grantors from fishing and hunting in any manner.⁴ As to prescription as against a private right, it is well settled that the exclusive right of fishing and hunting in or on another man's waters may also be acquired by prescription, by an actual and exclusive occupation and enjoyment of the fishing or hunting, adverse to the riparian proprietor, and continued for the period required by the statute of limitations.⁵ If the right has been once acquired by prescription, either as against the public or private rights, it may pass as an appurtenant to the owner's estate.⁶

§ 365. **Private—Riparian rights.**—Among the rights of riparian owners, in those States where the same are in force, may be mentioned the rights of fishing and hunting. And the general rule is that in and on all nonnavigable waters, where the title to the soil is in the riparian owners, they and they alone have the exclusive right of fishing and hunting in and on the waters opposite or on their lands to the extent of their riparian ownership in the soil under those waters.¹ The extent of the riparian owner's right in

Delaware etc. R. Co. v. Stump, 8 Gill. & J. 479, 29 Am. Dec. 561; Brookhaven v. Strong, 60 N. Y. 56; Gould v. James, 6 Cow. 369; Rogers v. Jones, 1 Wend. 237, 29 Am. Dec. 493; Fagan v. Armistead, 33 N. C. 433; Jackson v. Lewis, Cheves 259; Lord Advocate v. Lovat, 5 App. Cas. 273; McDougall v. Advocate, L. R. 2 H. L. Sec. 431.

³ Moulton v. Libbey, 37 Me. 472, 59 Am. Dec. 57; Melvin v. Whiting, 13 Pick. 184; Gould v. James, 6 Cow. 369; Edgar v. English Fisheries, 23 L. T. Rep. N. S. 732; Jackson v. Lewis, Cheves (S. C.) 259; Freary v. Cooke, 14 Mass. 488; Westfall v. Van Anker, 12 Johns. (N. Y.) 425; Collins v. Benbury, 25 N. C. (3 Ired. L.) 277, 38 Am. Dec. 722.

⁴ State v. Franklin Falls Co., 49 N. H. 240, 6 Am. Rep. 513; Tinicum Fishing Co. v. Carter, 61 Pa. St. (11 P. F. Smith) 21, 100 Am. Dec. 597.

⁵ McFarlin v. Essex Co., 10 Cush. 304; 309; Freary v. Cooke, 14 Mass. 488; Nickerson v. Bracket, 10 Mass. 212; Rolle v. Whyte, L. R. 3 Q. B. 286, 8 B. & S. 116, 37 L. J. Q. B. 105, 17 L. T. N. S. 560, 16 Week. Rep. 593; Turner v. Hebron, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386; Waters v. Lilley, 4 Pick. 145, 16 Am. Dec. 333.

⁶ Rogers v. Allen, 1 Campb. 309, 10 Rev. Rep. 689.

¹ For other rights of riparian owners, see Secs. 450-551.

See Hale De Jure Maris, Chap. 1, § 5; Angell on Water Courses, Secs.

this respect is to the middle or thread of the stream, where he owns upon one side only, and the entire stream where he owns both sides, and up and down the stream as far as his land extends.² The nature of a fishery is real and not personal property; it passes with a grant of the soil.³ Hence it follows that the right

61-76; Hargrave's Law Tracts, 256; Gould on Waters, Sec. 182; 3 Kent Com. 409, 417; Royal Fishery of the Banne, Davies, 149; Gould v. James, 6 Cowan 369; Hart v. Hill, 1 Whart. 124; Hooker v. Cummings, 20 Johns. 90; Freary v. Cooke, 14 Mass. 488; Commonwealth v. Chapin, 5 Pick. 199, 16 Am. Dec. 386; People v. Platt, 17 Johns. 195, 8 Am. Dec. 382; Smith v. Miller, 5 Mason 191, 22 Fed. Cas. No. 13,080.

State v. Mallory, 73 Ark. 236, 83 S. W. Rep. 955, 67 L. R. A. 773, where the Court held that the legislature of a State can not forbid a nonresident land owner from fishing and hunting on his property, within the State, while according such privileges to resident land owners, as being contrary to the fourteenth amendment of the Federal Constitution forbidding denial of equal protection of the laws, and the deprivation of property without due process of law.

See, also, Hall v. Alford, 114 Mich. 165, 72 N. W. Rep. 137, 38 L. R. A. 205; Lincoln v. Davis, 53 Mich. 375, 19 N. W. Rep. 103, 51 Am. Rep. 116; Sterling v. Jackson, 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405.

The right to fish and fowl is a part of the soil, and can not be acquired except by grant, and does not exist in an easement granted for a highway only. L. Realty Co. v. Johnson, 92 Minn. 363, 100 N. W. Rep. 94, 66 L. R. A. 439; Lamprey v. Danz, 86 Minn. 317, 90 N. W. Rep. 578; Brookhaven v. Strong, 60 N. Y. 56; Cobb v. Davenport, 32 N. J. L.

(3 Vroom.) 369, 380; Smith v. Rochester, 92 N. Y. 463, 4 Pick. 145, 44 Am. Rep. 393; Bingham v. Salene, 15 Ore. 208, 14 Pac. Rep. 523, 3 Am. St. Rep. 152; State v. Shannon, 26 Ohio St. 423, 38 Am. Rep. 599; State v. Gallop, 126 N. C. 979, 35 S. E. Rep. 180; Payne v. Sheets, 75 Vt. 335, 55 Atl. Rep. 656; Beatty v. Davis, 20 Ont. 373; Long Point Co. v. Anderson, 19 Ont. 487.

The right of fishery in nonnavigable streams is in the riparian owners, and one through whose land such stream flows may maintain a fence across it. Griffith v. Holman, 23 Wash. 347, 63 Pac. Rep. 293, 54 L. R. A. 178.

² Hooker v. Cummings, 20 Johns. 90, 11 Am. Dec. 249; Commonwealth v. Chapin, 5 Pick. 199, 16 Am. Dec. 386; Duncan v. Sylvester, 24 Me. 482, 41 Am. Dec. 400; Waters v. Lilley, 4 Pick. 145, 16 Am. Dec. 333; Commonwealth v. Alger, 7 Cush. 53; State v. Roberts, 59 N. H. 256, 47 Am. Rep. 199; Rexroth v. Coon, 15 R. I. 35, 23 Atl. Rep. 37, 2 Am. St. Rep. 863; *Re Ah Chong*, 6 Sawy. 451, 2 Fed. Rep. 733; Heckman v. Swett, 99 Cal. 303, 33 Pac. Rep. 1099; Brink v. Richtmyer, 14 Johns. 255; People v. Platt, 17 Johns. 195, 8 Am. Dec. 382; State v. Mallory, 73 Ark. 236, 83 S. W. Rep. 955, 67 L. R. A. 773.

³ Royal Fishery of the Banne, Davies, 149; Woolrych on Waters, p. 110; Queen v. Robertson, 6 Can. S. C. 52; *Re Provincial Fisheries*, 1 Fost. & F. 492; Cobb v. Davenport, 32 N. J. L. (3 Vroom.) 369, 380, 33 N. J.

of a riparian owner to fish in the water of a private river running by or through his land is not a riparian right in the nature of an easement, but strictly a right of property.⁴ The right of fishing and hunting being real property, it may be acquired by deed,⁵ or it may be leased from the owner, either with or without the soil, and with such restrictions and limitations as the owner may see fit to impose. And, this right being a right *profit a prendre*, or profit in the land, unless expressly reserved in the deed, it passed with a grant of the land.⁶ The exclusive right of fishing and hunting may be lost by the owner of the land by prescription.⁷ However, a right to fish and hunt not being an easement, but a *profit a prendre* which can not be acquired by a use or custom, except as connected with the real property, or in technical language, can not be prescribed for in gross, but only in a *que* estate, it can not be acquired except so far as it may be gained by adverse

L. 223, 97 Am. Dec. 718; McFarlin v. Essex Co., 10 Cush. 304, 309.

⁴ Queen v. Robertson, 6 Can. S. C. 52.

But see United States v. Winans, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662, where the Court held that the right of the Indians to fish in a river might be reserved in a treaty as against the rights of the riparian proprietors as subsequent grantees of the Government.

⁵ Beckman v. Kreamer, 43 Ill. 447, 92 Am. Dec. 146; Treat v. Parsons, 84 Me. 520, 24 Atl. Rep. 946; Wyman v. Oliver, 75 Me. 421; Duncan v. Sylvester, 24 Me. 482, 41 Am. Dec. 400; Butrick v. Tilton, 155 Mass. 461, 29 N. E. Rep. 1088; Waters v. Lilley, 4 Pick. 145, 16 Am. Dec. 333; Cobb v. Davenport, 32 N. J. L. (3 Vroom.) 369, 380, 33 N. J. L. 223, 97 Am. Dec. 718; Jackson v. Halstead, 5 Cow. (N. Y.) 216; Devonshire v. Patkinson, L. R. 20 Q. B. D. 263, 57 L. J. Q. B., N. S. 189, 58 L. T. Rep. N. S. 392, 52 J. P. 276.

The rule as to hunting is the same as that of fishing. See Bingham v.

Salene, 15 Ore. 208, 14 Pac. Rep. 523, 3 Am. St. Rep. 152, where the Court held, that a grant of "the sole and exclusive right, privilege, and easement to shoot, take, and kill" wild fowl on the "lakes and sloughs and waters" of the grantor, executed to the grantees, "their heirs and assigns for ever," was a grant of a *profit a prendre*, and not a mere license revocable at the pleasure of the grantor.

See, also, Weber v. Lee, 9 Q. B. D. 315, 47 J. P. 4, 51 L. J. Q. B. 485, 47 L. T. Rep. N. S. 215, 30 Week. Rep. 866.

⁶ See cases cited *supra*.

See, also, Lee v. Mallard, 116 Ga. 18, 42 S. E. Rep. 372; Mathews v. Treat, 75 Me. 594; Smith v. Miller, 5 Mason 191, 22 Fed. Cas. No. 13,080; Pannell v. Mill, 3 C. B. 625, 11 Jur. 109, 16 L. J. C. P. 91, 54 E. C. L. 625; Sherrard v. Gascoigne, 22 Q. B. 279, 69 L. J. Q. B. 720, 82 L. T. Rep. N. S. 850, 48 Week. Rep. 557.

⁷ See Sec. 364; Turner v. Hebron, 61 Conn. 175, 22 Atl. Rep. 951, 14 L. R. A. 386.

possession as a personal right by some individual or corporation which is competent to hold title to land.⁸

§ 366. **Right where declaration is made that waters are public.**—As we have seen, it is within the power of the legislatures of the States of the Union to determine the ownership of the soil under the waters within their respective jurisdictions, whether it shall remain in the State as it is when a State is admitted, or whether the title shall vest in the riparian owners.¹ We shall also see that it is within the power of a State to determine what use shall be made of the waters within their respective jurisdictions; whether the common law rules of riparian rights shall be adhered to, or whether the rule of appropriation shall prevail. When this rule has been so declared, either in the constitution of a State, or by legislative enactment, it is the law upon that subject within that jurisdiction, subject always to the law that the navigable capacity of the public waters of the United States must not be interfered with.² Many of the States in the arid and semi-arid regions of the United States have made this declaration, some in their constitutions and others by legislative enactment. In many of these States the declaration has been made to the effect that all waters within their jurisdictions are the property of the State, or the public.³ The question, then, before us is, What effect does this declaration have upon the fishing and hunting within those States having made this declaration? The answer to this question must be that all streams and other waters, having been dedicated to the public either by provisions in the constitutions of these States or by Acts of their legislatures, become public waters; and that, too, whether they are navigable or nonnavigable, or whether it be the law of the State that the ownership of the bed of these waters re-

⁸ Goddard, Easements, p. 6; Washburn, Easements, pp. 7, 125, Sec. 20; Merwin v. Wheeler, 41 Conn. 14; Waters v. Lilley, 4 Pick. 145, 16 Am. Dec. 333; Sale v. Pratt, 19 Pick. 191; Gateward's Case, 6 Coke 159b; Grimstead v. Marlow, 4 T. R. 718, 2 Rev. Rep. 512.

¹ See Sec. 330; Barney v. Keokuk, 94 U. S. 324, 24 L. Ed. 224.

² See Secs. 347-356; U. S. v. Rio

Grande Dam & Irr. Co., 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; Kansas v. Colorado, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 255.

For navigation, see Chap. 16, Secs. 341-357.

³ For declarations of the respective States, see Secs. 377-386.

main in the State or vest in the riparian owners. It is the waters themselves which are declared public, and therefore all incidents to those waters, which are necessary to the free and full enjoyment and use of the public in those waters are also dedicated to the public use; as, for example, the right to have those waters flow in their natural channels, when they may best serve the public there, and the right of the public of ingress and egress along these streams, and that, too, regardless of the ownership of the beds of these waters. The waters of the smallest water course or other body of water, under this solemn declaration, are as much public waters as though they were subject to the ebb and flow of the tide, or capable of navigation by the largest vessels afloat. Hence it follows that the public or individual members of the public, as long as these waters remain in their natural channels, have the right to use the streams and lakes for fishing and hunting from boats, where the waters are capable of floating them, and if not, they have the right of wading the streams; they have the right to erect blinds or other fishing or hunting devices on these waters; to entice the wild fowl to these waters and there to shoot or fish. The public have this right so long as they can gain access to these waters, by highways or other routes, without trespassing upon the banks or other lands of the private owners; or so long as they do not interfere with a more beneficial use of the waters provided by the laws of the State. So in those States which have made the dedication of all their waters to the public, the right of fishing and hunting is preserved to the general public to even a greater extent than in those older States where the rights of riparian ownership often interfere.⁴ The State being the owner of these waters, it is, of course, within its power to declare the paramount use, or the order of uses to which the waters within its jurisdiction shall be put. As, for example, the legislature may declare that the use of water for irrigation, upon diversion, shall be paramount to all other uses. But until the water is diverted from its natural streams it may be used for fishing and hunting, as above set forth, so long as this use does not in any way interfere with the use of the water for irrigation, or some other use of the water declared by the leg-

⁴ For rights of riparian owners to hunt and fish, see Sec. 365.

For rights to establish exclusive

fishing and shooting preserves in these States, see Secs. 363-368.

islature to be paramount to the right of fishing and hunting on those waters. But, as stated by the Colorado Court, "As between those claiming either a public or private right of fishery in our natural streams and those asserting the superior constitutional right of appropriation, the latter, in case of conflict, must prevail."⁵ And in Utah it was held, that as long as other rights were not interfered with a land owner was entitled to change the course of a natural stream which flowed over⁶ his premises and construct fish-ponds in the old bed, permitting the water diverted into his fish-ponds to run undiminished and unpolluted back into the stream.⁶ As a general rule the right of fishing and hunting on waters in the Western States follows the title to the waters. If the title is in the public, the public have that right, which right lasts only until some appropriator has made a diversion of the waters for some more useful purpose prescribed by the statute. If, however, the waters of the streams have not been declared to be public waters, as is the case where the common law is adhered to, the riparian owners have the exclusive right. If the title to the waters is in the public, but the title to the beds of the streams is in the riparian owners, the right of fishing and hunting follows the title to the waters, and hence, the public have that right.⁷

But this question should be considered from another point of view. In all of those States which have made this dedication to the public of the waters, fish and game laws have been enacted. Great sums of money, in some of these States amounting to hundreds of thousands of dollars, have been collected by the taxation of all the taxable property of the States, and have been expended in stocking with fish these waters dedicated to the public and in protecting them and the game flying over and inhabiting the waters. Statistics show that the most of this money collected by taxation comes from the cities of these States and from property not on these waters; they also show that a very small proportion of the farms through which these public waters flow are owned by people inhabiting the cities. It seems to us that no one should

⁵ Hartman v. Tresise, 36 Colo. 146, 84 Pac. Rep. 685, 4 L. R. A., N. S. 1138.

872; Sternberger v. Seaton etc. Co., 45 Colo. 401, 102 Pac. Rep. 168.

⁷ Lee v. Mallard, 116 Ga. 18, 42 S. E. Rep. 372; Teed v. Halstead, 5 Cow. 216.

contend for an instant that this money, belonging to all of the people of the State, collected by taxation and expended for the improvement and protection of these fishing and hunting grounds, was collected and expended for the sole benefit of the ranchmen, who, by fortunate circumstances, owned lands bordering on these public waters; or that it was for fishing and shooting clubs, or for individuals who were able to purchase lands bordering upon some stream, and that, upon the other hand, the great mass of the public must be excluded from fishing and hunting upon these waters so solemnly dedicated to the public. It seems to us that all the law, justice, and equity is with the right of the public to use these waters in accordance with the views set forth in the premises of this argument. And, whatever may be said in regard to the vested rights of those who acquired these lands before the Act of dedication was passed, those who acquired after the dedication certainly took their lands subject to the rights in the waters imposed by the dedication.

§ 367. **Right where declaration is made that waters are public—Hartman v. Tresise.**—Since writing all of the preceding section, we discovered the case of *Hartman v. Tresise*,¹ which formerly had been overlooked, and we will say that after carefully studying the majority opinion, written by Mr. Justice Campbell, we have no reason to change our views upon this important question, as stated in the preceding section. For a decision, which, in the face of constitutional and statutory law, overturned the rights of all the public in favor of the favored few, this decision certainly ought to go down to posterity as a leading case. The facts in that case were that in 1876, when Colorado was admitted to the Union, the following constitutional provision was adopted: "The water of every natural stream, not heretofore appropriated, within the State of Colorado, is declared to be the property of the public, and the same is dedicated to the use of the people of the State, subject to appropriation as hereinafter provided."² And in 1903 the legislature, in furtherance of this provision of the constitution, passed the following: "That the public shall have the right to fish in any stream in this State, stocked at public expense, subject to actions

¹ 36 Colo. 146, 84 Pac. Rep. 685, 4
L. R. A., N. S. 872.

² Colorado Const., Sec. 5, Art. 16.

in trespass for any damage done property along the banks of any such stream.”³ The plaintiff was the owner, and in possession of lands which were patented after the adoption of the constitution and Colorado’s admission as a State, and, of course, the title was subject to the constitutional provision. The defendant, a citizen of Colorado, waded into a natural stream where it ran through the plaintiff’s land, for the sole purpose of fishing, which he succeeded in doing against the objection and protest of the plaintiff, the stream having been previously stocked with fish at the expense of the State. The plaintiff brought an action in trespass against the defendant for breaking into plaintiff’s close. The defendant amply justified his act under the provision of the constitution and the Act of 1903, above quoted. The trial Court dismissed the action upon the ground that “defendant, as one of the citizens of this State, was only exercising the right granted to him by the general assembly under the constitution.” Upon appeal, the Supreme Court reversed the judgment of the District Court, with mandatory instructions to enter a judgment in favor of the plaintiff, upon the theory of the common law that the plaintiff owning the land on both sides of the stream owned the bed, and had the exclusive right of fishing in the stream, to the extent that it flows through his lands; and, second, “the legislature can not make lawful a trespass by one man upon the lands of another by providing that if any damage is thereby done a recovery therefor may be had.” The decision, therefore, held that the Act of 1903 was unconstitutional.

Mr. Justice Bailey of the Court wrote a dissenting opinion in the case, concurred in by Mr. Justice Steele, and this dissenting opinion contains all the logic, reason, law, and equity in the case, and should have been the decision of the Court. He first traces the history of the right of fishing and hunting from the time of the Angles and Saxons down to the common law of England; he shows how, under this law, these rights of the public to hunt and fish were first confined to the waters under the influence of the tide, because these at that time were the only public waters. He shows how, afterward, in this country these rights were extended to all waters even above the tide, as far as a boat could travel and the waters were in fact navigable, because these waters, being navi-

³ Sess. Laws, Colo., 1903, Chap. 112, p. 233.

gable, were public waters. Then, referring to the provision of the Colorado constitution quoted above, wherein the water of every natural stream, not appropriated, was declared to be the property of the public, and the same was dedicated to the use of the people of the State, he adds: "The act of fishing is not necessarily connected with the act of navigation. Their (the streams) being navigable made them public, and their being public gave the right of fishery. So that it ought not to be said that fishing is limited to navigable streams. Navigation is only one of the ways by which a stream may be made public. *There is no higher authority for making a stream public than the declaration of the people themselves in their compact of organization dedicating it to the use of the people.*" The opinion then goes on to show that the riparian rights in the several States are dependent upon the State laws,⁴ and that by various Acts of the legislature down to the one of 1903 the legislature of the State had treated the streams as public, not only in the use of the water, but also in the use of their beds. The opinion then goes on to show that the sum of \$311,500 of the people's money had been expended by the State authorities for the stocking, maintenance, and protection of fish in these public waters, which will be confiscated from the people to the sole benefit of a few landed proprietors, and finally concludes his argument with, "I, for one, am not willing to consent that this property and these rights may be taken by judicial repeal from the people in whom they are vested by the constitutional grant and given to the individual proprietors and club lessees by judicial enactment."⁵ Mr. Justice Bailey was undoubtedly correct in his views, and, although it is within the power of the constitutional convention and the legislature of a State to declare what policy the State shall pursue relative to the ownership of the beds of streams and the use of the waters flowing therein, this policy once having been declared by the constitution, followed up by legislative enactments, it is not for the Courts to legislate and declare an entirely new policy and overturn the old rule as laid down by the constitution and the legislature.⁶ And the right of the general

⁴ Citing *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Kenyon v. Knipe*, 46 Fed. Rep. 309.

⁵ For rights of fishing and shooting clubs, see Sec. 368.

⁶ For powers of a State as to the ownership of the waters in the State, see Secs. 372-389.

public to fish in all waters dedicated or declared to be public waters should be maintained until those waters are diverted from their natural sources and applied to some of the more beneficial uses provided for by the statute.

§ 368. **Exclusive right of fishing and hunting clubs.**—Throughout this whole country there are to be found fishing and hunting clubs which claim the exclusive rights of the hunting and fishing within certain areas of waters. The question now is, What rights, if any, have these clubs to the exclusive fishing and hunting superior to the rights of the general public? It is our view that these rights differ in the different States, and in the different localities of a State, according to the policy of the States declared by their constitutions or legislatures relative to the ownership of the beds of the waters, and the uses of the waters themselves. In those jurisdictions where riparian owners have the exclusive right of hunting and fishing on certain waters which run through or border their lands, there is no reason in law or equity why a fishing and shooting club may not also acquire the exclusive right. As we have seen, the right of hunting and fishing, being in the nature of real property, may be acquired by deed;¹ the right may be leased from the owner of the right, or it may be exercised under a license from him.² It may be acquired by prescription.³ This right may be also acquired from the State by means of a special grant, and the grantee will then have the exclusive right of the hunting and fishing. This grantee may be a hunting and fishing club; and, if so, it and its members will have all of the exclusive privileges which an individual would have. This is the rule, regardless of how the State acquired the lands; whether they were acquired under the law that upon its admission as a State it became vested with the title to the beds of all navigable waters, or whether by some Act of Congress the State became vested with certain lands, as, for example, the Swamp Land Act of 1850. The State upon being vested with these lands has the absolute right of disposal, by absolute grant, lease, or license; provided, of course, the navigable waters of the United States are in no way impaired. Where these grants have been made under authority of law, the wisdom of the

¹ See Sec. 360.

³ See Secs. 361, 364.

² See Sec. 361.

measure and those things in respect thereto, which indicate that the legislature did not properly guard the interests of the public, do not concern the merits of a case brought to enforce such an exclusive right.⁴ Upon the other hand, unless the right of a club is acquired in some of the methods mentioned, it or its members can not, by simply going upon certain waters and laying claim to certain portions thereof, acquire an exclusive right to the hunting and fishing thereon. To hunt and fish in and upon the navigable waters is a public right of which any citizen may avail himself, subject to the game laws of the State and the exceptions above mentioned. The right to hunt is as valuable to the individual as his right to fish, and the authorities which sustain and protect him in the exercise of the one may be invoked with equal force as to the other.⁵ And, where parties have a right to hunt or fish in or on these waters of a State, it is not a bare legal right, interference with which causes no substantial injury, but is a right of sufficient dignity to move a Court of Equity to protect it by injunction.⁶

There are other States where these questions have already arisen and are liable to arise in the future, and these are those States which have declared by their constitutions or by Acts of their legislatures to the effect that the title to all the waters within their respective jurisdictions is in the public. In these States, as well as in the other States, upon their admission to the Union, the beds of the navigable waters and the waters themselves vested in the States, and were subject to disposal and use according to the laws adopted. But, by making the declaration that all the waters within the State were the property of the public, the State did dispose of

⁴ *Diana Shooting Club v. Lamo-reaux*, 114 Wis. 44, 89 N. W. Rep. 880, 91 Am. St. Rep. 898; *Sterling v. Jackson*, 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405.

⁵ *Ainsworth v. Munoskong Hunting and Fishing Club*, 153 Mich. 185, 116 N. W. Rep. 992; *State v. St. Clair Fishing and Shooting Club*, 127 Mich. 580, 87 N. W. Rep. 117.

⁶ *Ainsworth v. Munoskong Hunting & Fishing Club*, *supra*; *Heckman v. Swett*, 107 Cal. 276, 40 Pac. Rep. 420,

aff'g 99 Cal. 303, 33 Pac. Rep. 1099; *Bolsa Land Co. v. Burdick*, 151 Cal. 254, 90 Pac. Rep. 532, 4 L. R. A., N. S. 275; *Wilson v. Hill*, 46 N. J. Eq. 367, 19 Atl. Rep. 1097; *Cherry Point Fish Co. v. Nelson*, 25 Wash. 558, 66 Pac. Rep. 55; *Womer v. O'Brien*, 37 Wash. 9, 79 Pac. Rep. 474; *Fitzgerald v. Firbank*, 2 Ch. 96, 66 L. J. Ch. 529, 76 L. T. Rep. N. S. 564; *Bingham v. Salene*, 15 Ore. 208, 14 Pac. Rep. 523, 3 Am. St. Rep. 152; *Stannard v. Hubbard*, 34 Conn. 370.

them, and to the public. As long as this declaration remains in full force and effect the exclusive right of fishing and hunting can not be acquired by a club, or even by a riparian owner, where his lands were acquired subject to the dedication, and where access to any waters may be obtained without trespassing upon the lands of the owner of the banks. The public are the owners of these waters and all the incidents thereto, which include the beds of the streams over which these waters flow; and the citizen of one of these States has not only the right to go where he can by boat, but he may also wade the beds of the streams and there fish or hunt. To declare any other rule is to deprive the general public of their rights and give them to the individual or club.⁷

As to the policy of a State conferring exclusive grants of fishing and hunting to clubs organized for these purposes, which, until the grant, belong to all the citizens of the State alike, I am firmly of the belief that it is wrong, especially where these waters are stocked, maintained, and protected at the expense of the public. As was said by Mr. Justice Morse, in rendering the dissenting opinion in the case of *Sterling v. Jackson*,⁸ which opinion was adopted afterward by the same Court in the case of *State v. St. Clair Fishing Club*:⁹ "I can not give my judicial sanction to the practical selling out of the public waters—the navigable streams of this State—for purposes of fishing and fowling to a favored few, to be stocked and replenished year by year at the expense of the public, and the

⁷ See discussion upon this subject in Secs. 366, 367.

See, also, *Hartman v. Tresise*, 36 Colo. 146, 84 Pac. Rep. 685, 4 L. R. A., N. S. 872, and dissenting opinion therein.

For the States which have the dedication of waters to the public, see Secs. 372-389.

The legislature has the right to control the subject of fishing and hunting and riparian rights. *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, Rev'g 16 Fed. Rep. 823; *Willow River Club v. Wade*, 100 Wis. 86, 76 N. W. Rep. 273, 42 L. R. A. 305.

Those States which hold the doc-

trine of State title to the public waters deny any redress for the injury to riparian rights, for the reason that they do not recognize the existence of such rights. *Lewis, Em. Domain*, Sec. 85.

In those States which have made this dedication, there is no difference between navigable and nonnavigable streams in the matter of hunting and fishing. *Boorman v. Sunnucks*, 42 Wis. 233; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541.

⁸ 69 Mich. 488, 37 N. W. Rep. 845, 13 Am. St. Rep. 405.

⁹ 127 Mich. 580, 87 N. W. Rep. 117.

shutting off of the great mass of the people, who bear the burden of such expense, from a right and enjoyment as dear to some of them, at least, as it can be to any riparian owner along such streams, or any member of a club or syndicate which has leased such owner's premises." It was said in a recent California case,¹⁰ relative to the creation of monopolies for gun clubs, as related to the use of waters for the purposes of irrigation: "It may be conceded that the Courts have recognized the right of gun clubs to practically create a monopoly in wild game over large areas of land, and have protected them in a so-called private proprietorship and limited dominion over such portions of the common property of the people of the State as they may induce to stay upon such preserves by feeding them and maintaining ponds therein. It may also be conceded that an exclusive right to hunt upon such preserves has also been held to be a species of property, and injunctions have been issued to prevent interference with the full exercise of such rights.¹¹ But, while the maintenance of such duck ponds no doubt contributes greatly to the enjoyment of the owner of the hunting privilege, it will scarcely be contended that this is a use of the water which is beneficial to the land. Neither does it follow that because the Courts have recognized such exclusive hunting privileges they must support the owners thereof in an encroachment upon another more necessary common right of the public, that of the conservation of the subterranean waters of the State for domestic uses and purposes of irrigation."

§ 369. Police powers of a State to regulate and protect fishing and hunting.—It is well established that by reason of a State's jurisdiction and control over the waters within its boundaries, and over the fish and game, it is within the police power of a State legislature, subject, of course, to constitutional restrictions, to enact such general and special laws as may be necessary for the regulation and protection of the fish and game within its boundaries, and found in or on the waters of the State.¹ This is also the rule

¹⁰ *Ex Parte Elam*, 6 Cal. App. 233, 91 Pac. Rep. 811.

¹¹ Citing *Kellogg v. King*, 114 Cal. 378, 46 Pac. Rep. 166, 55 Am. St. Rep. 74.

¹ *Geer v. State*, 161 U. S. 519, 40 40—Vol. I—Kin. on Irr.

L. Ed. 793, 16 Sup. Ct. Rep. 600; *People v. Truckee Lum. Co.*, 116 Cal. 397, 48 Pac. Rep. 374, 39 L. R. A. 581, 58 Am. St. Rep. 183; *In re Delaware River*, 131 App. Div. 403, 115 N. Y. Supp. 750; *Hooker v. Cum-*

as to other game not connected with waters, but with that subject we have nothing to do. This dominion of a State, by means of its police powers, of protecting its sovereign rights in the fish and game in and on the waters within its jurisdiction, and their preservation for the common enjoyment of its citizens, is not restricted to their protection only when found in what may be held to be navigable or otherwise public waters. It extends to all natural waters within the State, public or private, wherein fish are accustomed to resort for spawning purposes, or the wild fowl for the purposes of breeding or protection, and through and to which they have the freedom of passage from the public fishing and hunting grounds of the State. And the Courts hold that to the extent that waters are the common passageway for fish, or are the common resorts for water fowl, although flowing over lands entirely subject to private ownership, they are deemed for such purposes public waters, and subject to all the laws regulating the rights of fishing and hunting.² So the legislature has the authority to reg-

mings, 20 Johns. 90, 11 Am. Dec. 249; *People v. Dostater*, 75 Hun 472, 27 N. Y. Supp. 481; affirmed in 147 N. Y. 723, 42 N. E. Rep. 724; *State v. Beardsley*, 108 Iowa 396, 79 N. W. Rep. 138; *Stoughton v. Baker*, 4 Mass. 522, 3 Am. Dec. 236; *Parker v. People*, 111 Ill. 581, 53 Am. Rep. 643.

² *Lawton v. Steele*, 152 U. S. 133, 38 L. Ed. 385, 14 Sup. Ct. Rep. 499, aff'g *Id.* 119 N. Y. 226, 23 N. E. Rep. 878, 7 L. R. A. 134, 16 Am. St. Rep. 813, in which the Supreme Court of the United States held that it is the duty of a State to preserve the fisheries of the State from extinction, by prohibiting exhaustive methods of fishing, or the use of such destructive instruments as are likely to result in the extermination of the young as well as the mature fish.

See, also, *Cottrill v. Myrick*, 12 Me. 222; *State v. Franklin Falls Co.*, 49 N. H. 240, 6 Am. Rep. 513; *State v. Roberts*, 59 N. H. 256, 47 Am. Rep. 199; *Ex Parte Maier*, 103 Cal. 476,

37 Pac. Rep. 402, 42 Am. St. Rep. 129; *People ex rel. Ricks Water Co. v. Elk River Mill & L. Co.*, 107 Cal. 24, 40 Pac. Rep. 521, 48 Am. St. Rep. 125; *Phelps v. Racey*, 60 N. Y. 10, 19 Am. Rep. 140; *State v. Snover*, 42 N. J. L. 341; *Williams v. Blackwall*, 2 Hurlst. & C. 33, L. J. Exch. N. S. 174 Jur. N. S. 579, 8 L. T. N. S. 252, 11 Week. Rep. 621; *Smith v. Levinus*, 8 N. Y. 472; *Wyndehamer v. People*, 378; *Holyoke Water Power Co. v. Lyman*, 82 U. S. 15 Wall. 500, 21 L. Ed. 133; *Commonwealth v. Chapin*, 5 Pick. 199, 16 Am. Dec. 386; *Commonwealth v. Essex Co.*, 13 Gray 239; *Inland Fisheries Comrs. v. Holyoke Water Power Co.*, 104 Mass. 446, 6 Am. Rep. 247; *Hart v. Albany*, 9 Wend. 571, 24 Am. Dec. 165; *People v. Truckee Lum. Co.*, 116 Cal. 397, 48 Pac. Rep. 374, 39 L. R. A. 581, and note; *Ex Parte Bailey*, 155 Cal. 472, 101 Pac. Rep. 441, 132 Am. St. Rep. 95; *Portland etc. Co. v. Benson*, 56 Ore. 147, 108 Pac. Rep. 122.

ulate the taking of fish and game and to provide severe penalties for a violation of the regulations;³ this may be fine, imprisonment, and a forfeiture of the fish and game taken. Statutes may be enacted regulating the time when it may or may not be lawful to fish or hunt;⁴ and also regulating the method by which the fish and game may or may not be taken.⁵

A State has also the power to make it an offense to have in possession, for the purpose of transportation beyond the State, fish or game which have been lawfully taken within the State during the open season.⁶ A State law is valid which confers the exclusive right of fishing and hunting upon its citizens to the exclusion of nonresidents.⁷ There are many other laws which may be enacted under the police powers of a State, which it is not necessary to mention here. But there are two subjects which should be mentioned in this connection, and these are: The authority of a State to regulate the construction of all obstructions in a stream, so that the fish may pass and repass, as, for example, dams con-

See, also, *Ex Parte* Elam, 6 Cal. App. 233, 91 Pac. Rep. 811.

³ *Burnham v. Webster*, 5 Mass. 266.

⁴ *Gentile v. State*, 29 Ind. 409; *Ruther v. Harris*, L. R. 1 Exch. Div. 97, 45 L. J. M. C. N. S. 103, 33 L. T. N. S. 825; *State v. Beal*, 75 Me. 289; *Commonwealth v. Wentworth*, 15 Mass. 188; *Commonwealth v. Look*, 108 Mass. 452; *Ex Parte* Hewlett, 22 Nev. 333, 40 Pac. Rep. 96; *State v. Smith*, 61 Vt. 346, 17 Atl. Rep. 492.

⁵ *Lawton v. Steele*, 152 U. S. 133, 38 L. Ed. 385, 14 Sup. Ct. Rep. 499, affirming 119 N. Y. 226, 23 N. E. Rep. 878, 7 L. R. A. 134, 16 Am. St. Rep. 813.

In a recent case in California it was held that it was immaterial to those accused of guilt whether they acted as fishermen, merchants, or merchants' employees; the sole question being whether they took part in the illegal fishing in violation of the Pen. Code, Sec. 634, prohibiting fishing

with certain nets. *People v. Russo*, 8 Cal. App. 636, 97 Pac. Rep. 700.

See, also, *Commonwealth v. Prescott*, 151 Mass. 60, 23 N. E. 729; *State v. Mrozinski*, 59 Minn. 465, 61 N. W. Rep. 560, 27 L. R. A. 76; *State v. Lewis*, 134 Ind. 250, 33 N. E. Rep. 1024, 20 L. R. A. 52; *McGowan v. Larsen*, 66 Fed. Rep. 910, 14 C. C. A. 178, 29 U. S. App. 554.

See, also, the case of *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662, where the Court held that although a treaty with the Indians fixed in the riparian land such easements as entitled the right to be exercised, that it did not "restrain the State unreasonably, if at all, in the regulation of the right."

⁶ *Geer v. State*, 161 U. S. 519, 16 Sup. Ct. Rep. 600, 40 L. Ed. 793.

⁷ *State v. Harrub*, 95 Ala. 176, 10 So. Rep. 752, 15 L. R. A. 761, 36 Am. St. Rep. 195.

But see *State v. Mallory*, 73 Ark. 236, 83 S. W. Rep. 955, 67 L. R. A. 773.

structed for the diversion of the water from the streams for irrigation and power purposes; and laws prohibiting the destruction of fish by unlawful means, as by permitting them to be carried over lands by ditches used in irrigating these lands. These two subjects will be discussed in separate sections.⁸

§ 370. Police powers of a State to regulate obstructions in streams.—At common law riparian proprietors can not place obstructions in a stream which will interfere with the passage of fish up and down the streams, although such streams may be nonnavigable and are entirely subject to private ownership.¹ In this country it is within the police power of a State, through its legislature, to enact statutes to protect the passage of migratory fish up and down streams, and that, too, regardless of the fact as to whether the streams are to be deemed public or private. To the extent that waters are the common passageway for fish, although flowing over lands entirely subject to private ownership, they are deemed for such purposes public waters, and subject to all the laws regulating the right of fishery.² In many States the maintenance of dams or other obstructions to the free passage of fish is an indictable offense.³ But in all parts of this country dams in streams are required for industrial pursuits of many kinds. Dams must be built for the diversion of water for power purposes; they must also be built for the diversion of water for irrigation. These are legitimate pursuits, and for their full accomplishment certain obstructions must be placed in the streams, which, to a certain extent at least, obstruct the passageway of fish. How can all of these in-

⁸ For regulating obstructions in streams, so that fish may pass, see Sec. 370.

For the unlawful destruction of fish by irrigation ditches, see Sec. 371.

¹ *Weld v. Hornby*, 7 East. 195, 3 Smith 244, 8 Rev. Rep. 513; *Murphy v. Ryan*, 2 Ir. Rep. C. L. 143, 16 Week. Rep. 678; *Sutherland v. Ross*, 3 App. Cas. 736.

² *People v. Truckee Lum. Co.*, 116 Cal. 397, 48 Pac. Rep. 374, 39 L. R. A. 581, 58 Am. St. Rep. 183; *Cottrill v. Myrick*, 12 Me. 222; *State v. Frank-*

lin Falls Co., 49 N. H. 240, 6 Am. Rep. 513; *State v. Roberts*, 59 N. H. 256, 47 Am. Rep. 199; *Smith v. People*, 46 Ill. App. 130; *Summers v. People*, 29 Ill. App. 170; *Commonwealth v. Alger*, 7 Cush. 53; *Stoughton v. Baker*, 4 Mass. 522, 3 Am. Dec. 236; *Hyde v. Russell*, 2 Cush. 251.

³ *Hamilton v. Donnegall*, 3 Ridge-way 276; *State v. Franklin Falls Co.*, 49 N. H. 240, 6 Am. Rep. 513; *State v. Roberts*, 59 N. H. 256, 47 Am. Rep. 199; *Chase v. Baker*, 59 N. H. 347.

dustries be preserved without injuring each other to the least possible extent? It has been discovered that if a passageway is constructed through the dam, consisting of a series of stairs, that the fish will ascend the streams, practically the same as though there was no obstruction. Hence it follows that the right of fishery, as well as the right to use the water of a stream for power and irrigation purposes, being all entitled to public protection, are subject to legislative regulation and control. Therefore, it is within the power of the legislature of a State to enact laws compelling the owners of dams on all streams within the State to construct and maintain adequate fishways for the free passage of fish, and to make it a criminal offense not to do so, after due notice.⁴ And the weight of authority holds that this is true, notwithstanding such dam or other obstruction has been maintained for the usual period for prescription.⁵ We will only add in this connection that in this country the statute books of almost all of the States show the solicitude of their respective legislatures to protect and maintain the fisheries in this country by preserving a free passage through all dams and other obstructions in the streams and rivers which flow within their respective jurisdictions; this is not only true in those rivers which are visited by fish from the ocean, but also in the smaller streams. In nearly every State of the arid region of this country are statutory provisions, which provide that the builders and owners of dams constructed in any of the rivers and streams for the purpose of diverting water for irrigation or otherwise, shall construct suitable fishways, so that the fish may have as free a passage as possible up and down these streams.⁶

⁴ *Holyoke Water Power Co. v. Lyman*, 82 U. S. 15 Wall. 500, 21 L. Ed. 133, *affm'g* 104 Mass. 446, 6 Am. Rep. 247; *State v. Meek*, 112 Iowa 338, 84 N. W. Rep. 3, 51 L. R. A. 414, 84 Am. St. Rep. 342; *State v. Beardsley*, 108 Iowa 396, 79 N. W. Rep. 138; *Stoughton v. Baker*, 4 Mass. 522, 3 Am. Dec. 236; *Swift v. Falmouth*, 167 Mass. 115, 45 N. E. Rep. 184; *State v. Griffin*, 89 Mo. 49, 1 S. W. Rep. 87; *Commonwealth v. Chapin*, 5 Pick. 199, 16 Am. Dec. 386; *Commonwealth v. Essex Co.*, 13 Gray 239; *State v. Stover*, 42 N. J. L. 341;

Doughty v. Conover, 42 N. J. L. 193; *West Point Water Power Co. v. State*, 49 Neb. 218, 66 N. W. Rep. 6.

⁵ *Parker v. People*, 111 Ill. 581, 53 Am. Rep. 643; *Cottrill v. Myrick*, 12 Me. 222; *State v. Franklin Falls Co.*, 49 N. H. 240, 6 Am. Rep. 513; *Weld v. Hornby*, 7 East. 195, 3 Smith K. B. 244, 8 Rev. Rep. 513.

But see *Woolever v. Stewart*, 36 Ohio St. 146, 38 Am. Rep. 569.

⁶ For the statutes providing for fishways, see the subject under the various States, Part XIV.

§ 371. Destruction of fish by means of irrigation ditches.—

There is another important question which comes strictly within the police power of a State, and which in the Western portion of this country is too often overlooked, and that is the prevention of the enormous destruction of fish, especially by means of irrigation canals and ditches. These irrigation canals are many times taken out of streams which are inhabited by mountain trout, salmon, and other valuable food and game fishes. By leaving the intakes of these canals open the water from the stream rushes in and is conveyed to the fields which it is used to irrigate. With this water many fish go also, which swim along the main canals and the laterals, and finally into the smaller ditches, and are thrown upon the irrigated fields, where they perish. In some places this practice is carried on purposely, under the idea that the fish make a good fertilizer for the land. In other places this is practiced as a unique method of catching fish.¹ Again, in places, there is the practice of draining canals, at times of cleaning them out, or at other times, by shutting off the water at the intake and permitting the water already in the canals to drain out, the fish are caught in a trap, and are to be found by thousands floundering about in the pools at the bottom, where they are either taken out with pitchforks or other implements, or are allowed to perish where they are. There is absolutely no question but that it is within the police power of a State to prevent the wanton destruction of its fish and game. A law is valid which forbids the killing of fish by poison or explosives,² or by the pollution of a stream by means of refuse from sawmills,³ or other deleterious substances which will either destroy the fish or drive them from the streams.⁴ And, therefore, a law is valid, and strictly within the police power of a State, which provides that the intakes of all canals and ditches, where the water is diverted from the natural streams for the purpose of irrigation or other uses, the owner of such ditch or works shall cause to be constructed wire screens to prevent the fish in

¹ See *Lobdell v. Hall*, 3 Nev. 507.

² *Keoun v. State*, 64 Ark. 231, 41 S. W. Rep. 808.

³ *People v. Truckee Lumber Co.*, 116 Cal. 397, 48 Pac. Rep. 374, 39 L. R. A. 581, 58 Am. St. Rep. 183.

⁴ *Cartwright v. Canandaigua Gas-*

light Co., 32 Hun 403; *State v. Kroenert*, 13 Wash. 644, 43 Pac. Rep. 876; *State v. American Forcite Powder Mfg. Co.*, 50 N. J. L. 75, 11 Atl. Rep. 127; *Blydenburgh v. Miles*, 39 Conn. 484; *Stead v. Tillotson*, 64 J. P. 343, 69 L. J. Q. B. 240, 48 Week. Rep. 431.

the streams from going down the canals and being destroyed as related above. It may be said that the legislatures of the most of the States have such provisions on their statutes, but the dearth of the cases which have got to the Courts of last resort testify to the fact that these statutes are not very strenuously enforced. It is claimed by some that it imposes a hardship upon the canal owners if the law is enforced; that the screens fill up with the leaves and brush; that holes are broken through the screens by the drift-wood, and that the fish jump over the screens and so get into the canals; and that there are other difficulties. In reply to this, I will only add that the law does not require impossibilities. But a little more activity upon the part of fish and game wardens in looking after this particular subject would preserve vast quantities of fish that are now being wantonly destroyed and wasted, and would save a great expense to the State, which had formerly stocked these streams with these very fish.

CHAPTER 18.

DEDICATION BY A STATE OF ITS WATERS.

- § 372. Scope of chapter—Jurisdiction of a State over its waters—Terms of dedication.
- § 373. Cause leading up to dedication.
- § 374. Powers of a State to dedicate its waters.
- § 375. Powers of a State to dedicate its waters—Limitations to the rule.
- § 376. Early dedications.
- § 377. States which have dedicated their waters.
- § 378. Dedication by California—Partial by constitution and total by late statute.
- § 379. Dedication by Colorado—Total dedication by the constitution.
- § 380. Dedication by Idaho—Total dedication by constitution and statute.
- § 381. Dedication by Montana—Partial.
- § 382. New Mexico—Total dedication by the constitution and statutes.
- § 383. Dedication by North Dakota—Total by the constitution.
- § 384. Dedication by Washington—Partial by the constitution.
- § 385. Dedication by Wyoming—Total dedication by the constitution.
- § 386. Statutes of States not having constitutional provisions.
- § 387. Effect of dedication by the States—Different doctrines.
- § 388. Effect of dedication—As against the rights of the United States.
- § 389. Other effects of dedication.

§ 372. Scope of chapter—Jurisdiction of a State over its waters—Terms of dedication.—We have seen in previous sections ¹ that, in this country it is within the power of a State to declare whether the ownership of the soil under its waters shall remain in the State, or shall vest in the riparian owners.² We shall also see, in a future portion of this work, that under the common law the right to the use of waters depends largely upon the ownership of the land through which, or adjoining which, the waters flow in their natural channels.³

In this chapter we shall attempt to show that the common law in many of the Western States has been modified by a declaration either in their respective constitutions or by legislative enactment, to the effect that the waters within such respective jurisdictions are “the property of the State” or “the property of the public.” Respecting the declaration that the waters are “the

¹ See Secs. 329, 330.

³ See Secs. 451, 458.

² See Sec. 330.

property of the State" or "the property of the public," the Courts hold that these two terms are synonymous. As was said by the Court: "There is to be observed no appreciable distinction, under the doctrine of prior appropriation, between a declaration that the water is the property of the public and that it is the property of the State."⁴ What is really meant by the above expressions is that the running water is *publici juris*, or open to the people of the respective States for appropriation for beneficial uses or purposes. As was said in a Wyoming case: "Under the rule permitting the acquisition of rights by appropriation the waters become, perforce, '*publici juris*.'"⁵ Again, in a Federal case arising in Colorado, Judge Hallett said: "The waters of flowing streams are *publici juris*—the gift of God to all His creatures." It is further held that by the use of either phrase the State in its sovereign capacity, as the representative of the public or the people, is vested by such dedication with the jurisdiction and control of the waters flowing within its boundaries.⁶ It, therefore, follows that the office of the State is regulative and administrative, and that the State acts in its sovereign capacity rather than owner.⁷ Also in *Kansas v. Colorado*,⁸ wherein it was held that the power of the State to regulate and control the waters without interference was paramount, and that, too, without an intimation of an actual State ownership. This ownership or jurisdiction of a State over its waters must always be considered subject to the rights and jurisdiction of the United States over what are known as the navi-

⁴ *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

⁵ *Willey v. Decker*, 11 Wyo. 498, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

⁶ *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

⁷ See *Robertson v. People ex rel. Soule*, 40 Colo. 119, 90 Pac. Rep. 79; *Farmers etc. Co. v. Southworth*, 13 Colo. 111, 21 Pac. Rep. 1028, 4 L. R. A. 767; *Speer v. Stephenson*, 16 Idaho 707, 102 Pac. Rep. 365, wherein it is held that the term "public waters" refers to all the waters running in the natural channels of the streams

within the State; that the State may by proper legislation regulate the appropriation and use thereof, and the private rights authorized by law were simply relative to the use of the public waters and not an ownership in them, at least while they were flowing in their natural channels.

See, also, *White v. Farmers' etc. Co.*, 22 Colo. 191, 43 Pac. Rep. 1028, 31 L. R. A. 828; *Lamson v. Vailes*, 27 Colo. 201, 61 Pac. Rep. 231; *Fort Lyons etc. v. Chew*, 33 Colo. 392, 81 Pac. Rep. 37;

⁸ 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

gable waters of the United States for the purpose of protecting their navigable capacity,⁹ and also the rights of the United States as a riparian owner on waters is a subject which will be discussed in future sections of this work.¹⁰

§ 373. Cause leading up to dedication.—The greater portion of the arid region of the United States was acquired from Mexico by the treaty of Guadalupe Hidalgo in the year 1848. After that treaty, the United States, being the sole owner of the land, was also the sole owner of the waters thereon, and had full power to deal with them as it saw fit. That the United States did not then deal with these waters and establish a uniform system was undoubtedly because this section of the country was generally regarded as valueless, and not worth the trouble of Congress to enact specific laws regulating the control and use of waters. However this may be, it is to be regretted that Congress did not then act. Immediately upon the cession of the territory in question the United States, being the owner of both the land and the waters, and having adopted the rule of the common law governing the subject of waters, became what is known in law as the sole riparian proprietor of all the water courses and the waters flowing therein, and all other rights were assimilated by the common law rule.¹ But the greater portion of this territory being hot, dry, and very arid, it was soon found that the common law rule of riparian rights was not in all respects applicable to the existing conditions, owing largely to the fact that, under that law, the water of a stream must flow as it was wont to flow by Nature, within the channel of the stream.² And this, coupled with the further fact that in this region which, prior to the treaty with Mexico, had been sparsely settled in certain localities, a different custom relative to the use of the waters had been in vogue for many years, whereby the waters of the streams, in order to meet the necessities of supporting life, had been diverted from their natural channels and used in the irrigation of the lands, thus changing the region from one which was entirely barren to one which could even be made,

⁹ For right of navigation, see Chap. 16, Secs. 343-346.

¹⁰ For the rights of the United States as a riparian owner, see Sec. 480.

¹ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

² For riparian rights, see Secs. 450-551.

and since has been made, luxuriously habitable.³ This custom which has been referred to sprang from the laws of Mexico, the former owner of the country; and Mexico in turn, with some modification, had adopted the civil law rule relative to the control, use, and jurisdiction of waters.⁴

Owing to the climatic conditions, the search for gold, and the exceeding fertility of the soil, settlers were attracted to these arid regions, and the use of the water by diverting it from its natural channels and applying it to some beneficial purpose continued. When the population of certain sections had increased to such an extent as to make it practicable, Territorial governments were formed, including certain portions of this region, and these were followed by State governments. In the constitutions of these States the common law was adopted so far as it was applicable to the existing conditions, and, upon the subject of waters, in many of the States, at the very time of the adoption of their constitutions, all of the claims to the waters within the State were under the custom of appropriation, and very few, if any, claims were made under the common law rule of riparian ownership. So, in a number of these States, in the constitutions themselves, there was a provision made dedicating all the waters within the State to the public, or to the State. This was evidently done in order to counteract the provisions of the common law adopted in another portion of the constitution, and to sanction the custom, as far as possible for a State constitution to sanction it, of the law of appropriation for beneficial purposes. Other States which had not adopted constitutional provisions of this nature, and some which had, also adopted legislative enactments to the same effect, declaring all waters within their boundaries the property of the State or public.⁵ It will be noticed that the dedications to the public most absolute in their terms are in the constitutions and laws of those States which are physically the most arid, the intent evidently being to abolish the common law theory of riparian rights as far as possible.⁶ By this doctrine it is seen that the title to the

³ For the history of the development of the Arid Region doctrine, see Secs. 595-626.

⁴ For the rule of the civil law, see Secs. 552-584.

⁵ For the terms of the dedication

in the various States, see Secs. 376-386.

⁶ For the express terms of these dedications, see Secs. 379-386.

For the history and intent of these dedications, see *Farm Investment v.*

use of the water is in the public, or the State, which in turn, under its regulative or police powers, may prescribe by legislative enactment the details as to how an individual or corporation may acquire the right to the use of a portion of the water. This rule is called the doctrine of State control,⁷ as distinguished from the doctrine of Governmental control, or the claim that the right to the waters on the public lands is vested in the United States, and not in the State, and that the appropriators derive their title to them directly from the United States, and not from the State, for the reason, as was recently said by the Supreme Court of Washington, the waters are "utterly beyond the power or control of State legislatures."⁸ Coming down to the rights of the appropriator, in a jurisdiction where there has been an absolute dedication of its waters either to the public, as is the case in Colorado,⁹ or to the State, as is the case in Wyoming,¹⁰ it is held that the appropriator secures a right of use, which has been held, with

Carpenter, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918; *Smith v. Deniff*, 23 Mont. 65, 24 Mont. 20, 57 Pac. Rep. 557, 60 Pac. Rep. 398, 50 L. R. A. 737, 81 Am. St. Rep. 408; *Ft. Morgan Land & Canal Co. v. South Patte Ditch Co.*, 18 Colo. 1, 30 Pac. Rep. 1032, 36 Am. St. Rep. 259; *Wheeler v. Northern Colo. Irr. Co.*, 10 Colo. 582, 17 Pac. Rep. 487, 3 Am. St. Rep. 603; *Combs v. Agricultural D. Co.*, 17 Colo. 146, 28 Pac. Rep. 966, 31 Am. St. Rep. 275; *Re Adjudication of Water Rights in Dist. No. 33 (D. C. Colo.)*, 1 Denver Legal Adv. 300; *Clough v. Wing*, 2 Ariz. 371, 17 Pac. Rep. 453; *Slosser v. Salt River Valley Canal Co.*, 7 Ariz. 376, 65 Pac. Rep. 332; *Boquillas etc. Co. v. Curtis*, 11 Ariz. 128, 89 Pac. Rep. 504; *aff'd* 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493; *Wilterding v. Green*, 4 Idaho 773, 45 Pac. Rep. 134; *Suffolk Gold Min. & M. Co. v. San Miguel Consol. Min. & M. Co.*, 9 Colo. App. 407, 48 Pac. Rep. 828; *Clark v. Ashley*, 34 Colo. 285, 82 Pac. Rep. 588; *Crawford Co. v. Hall*, 67 Neb. 325,

93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Willey v. Decker*, 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939; *Moyer v. Preston*, 6 Wyo. 308, 44 Pac. Rep. 845, 71 Am. St. Rep. 914; *Hoge v. Eaton*, 135 Fed. Rep. 411, 141 Fed. Rep. 64, 72 C. C. A. 74; *Mohl v. Lamar Canal Co.*, 128 Fed. Rep. 776; *Union M. & M. Co. v. Dangberg*, 2 Sawyer 450 Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; 81 Fed. Rep. 73; *Anderson v. Bassman*, 140 Fed. Rep. 14; *Cruse v. McCauley*, 96 Fed. Rep. 369; *Biglow v. Draper*, 6 N. D. 152, 69 N. W. Rep. 570; *Lux v. Haggins*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁷ For doctrine of State control, see Chap. 68.

⁸ *Kendall v. Joyce*, 48 Wash. 489, 93 Pac. Rep. 1091.

⁹ For dedication in Colorado, see Sec. 379.

¹⁰ For dedication in Wyoming, see Sec. 385.

good reason, to amount to a property right, and not a title to the running water itself,¹¹ except, it may be, to such quantity as shall from time to time be lawfully diverted into his own ditches. The title to the water of the appropriator fastens, not upon the water while flowing along its natural channel, but upon the use of a limited amount thereof for beneficial purposes in pursuance of an appropriation lawfully made and continued. The appropriation is made upon the basis that the public or State is the owner of the waters, and is protected, instead of impaired, by the constitutional dedication.¹²

§ 374. Powers of a State to dedicate its waters.—A State has full power to dedicate all the waters within its boundaries to the public, and then prescribe by proper legislation how the public, or any individual or corporation as a part of the public, may use those waters. This power of a State is subject to two exceptions—the right of navigation,¹ and the riparian rights of the general Government in the lands still owned by it.²

In preceding sections we have seen that it is within the power of each State to make such a rule relative to the ownership of the soil under nontidal navigable rivers as it sees fit, and whether it shall remain in the State or vest in the riparian owners.³ So, too, each State has the absolute power, subject to the above limitations, to regulate and control all the waters flowing within its boundaries, and the use of such waters. Hence it follows that the system of laws which may be adopted, regulating and controlling the distribution and use of waters, is left entirely to the State wherein they are found. Each State may determine by its legislature for itself whether the common law rule of riparian rights, the rule of the civil law that all waters are *publici juris*,⁴ or the Arid Region Doctrine of appropriation, as the same is known and in force in

¹¹ For title to water, see Secs. 288-290, 333.

¹² *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

¹ For right of navigation, see Chap. 16, Secs. 341-357.

² For right of the Government as a riparian owner, see Sec. 388.

For the ownership of the water itself, see Secs. 288-290, 333.

³ See Secs. 328-332.

⁴ For the common law of riparian rights, see Chaps. 21-28, Secs. 450-551.

For the civil law, see Chaps. 29, 30, Secs. 552-584.

the Western portion of this country, shall prevail.⁵ This being the undoubted rule of law, it gives the State full power and jurisdiction over the waters flowing or lying within the boundaries of

⁵ That each State has the power to adopt such rule governing waters and their use, see, also, Sec. 593.

For the doctrine of State control or State administration, see Chap. 68.

See, also, the following cases: *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 46, 51 L. Ed. 957, 27 Sup. Ct. Rep. 655; *Gutierrez v. Albuquerque Land & Irr. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357; *Martin v. Waddell*, 16 Pet. 367, 10 L. Ed. 997; *Pollard v. Hagan*, 44 U. S. 3 How. 212, 13 L. Ed. 220; *Pollard v. Kibbe*, 50 U. S. 9 How. 471, 13 L. Ed. 220; *Barney v. Keokuk*, 94 U. S. 324, 24 L. Ed. 224; *St. Louis v. Myers*, 113 U. S. 566, 28 L. Ed. 1131, 5 Sup. Ct. Rep. 640; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823; *Kaukauna Water Power Co. v. Green Bay & M. Canal Co.*, 142 U. S. 254, 35 L. Ed. 1004, 12 Sup. Ct. Rep. 173; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *St. Anthony Falls Water Power Co. v. St. Paul Water Comrs.*, 168 U. S. 349, 42 L. Ed. 497, 18 Sup. Ct. Rep. 157; *Kean v. Calumet Canal & Imp. Co.*, 190 U. S. 452, 47 L. Ed. 1134, 23 Sup. Ct. Rep. 651; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Clark v. Nash*, 198 U. S. 361, 49 L. Ed. 1085, 25 Sup. Ct. Rep. 676, 4 Ann. Cas. 1171, affirming *Id.*, 27 Utah 158, 75 Pac. Rep. 371, 1 L. R. A.,

N. S. 208, 101 Am. St. Rep. 953; *Bear Lake etc. Co. v. Garland*, 164 U. S. 1, 41 L. Ed. 327, 17 Sup. Ct. Rep. 7, affirming *Id.*, 9 Utah 350, 34 Pac. Rep. 368; *Telluride etc. Co. v. Rio G. W. R. Co.*, 175 U. S. 639, 44 L. Ed. 305, 20 Sup. Ct. Rep. 245; 187 U. S. 569, 47 L. Ed. 307, 23 Sup. Ct. Rep. 178, where the Court held that the validity of an appropriation of waters within any State is made by the Federal statutes a question of State law.

Whitaker v. McBride, 197 U. S. 510, 49 L. Ed. 857, 25 Sup. Ct. Rep. 530; *Basey v. Gallagher*, 86 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Sturr v. Beek*, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350; *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *McGilvra v. Ross*, 215 U. S. 70, 54 L. Ed. 95, 30 Sup. Ct. Rep. 27; *United States v. Rio Grande etc. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Bean v. Morris*, 221 U. S. 485, 55 L. Ed. 821, 31 Sup. Ct. Rep. 703, affirming *Id.*, 159 Fed. Rep. 651, 86 C. C. A. 519, where the United States Supreme Court said: "The State of Montana has full legislative power over Sage Creek while it flows within that State."

"The extent of riparian rights belonging to pueblos or persons receiving such patents is a matter of local or general law." *Los Angeles Farming & Milling Co. v. Los Angeles*, 217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452, dismissed for want of jurisdiction.

For same case below, see 152 Cal. 645, 93 Pac. Rep. 869, 1135.

any State, and its legislature may adopt such laws as it sees fit regulating the distribution and use of the waters, and among these may be a dedication of all the waters within a State to the State or to the public.⁶

We also find that it is within the police power of a State to protect the waters within its boundaries. As was said by Mr. Justice Holmes, in the case of *Hudson County Water Co. v. McCarter*,⁷ "It is recognized that the State as quasi sovereign and representative of the interests of the public, has a standing in Court to protect the atmosphere, the water, and the forests within its territory, irrespective of the assent or dissent of the private owners of the land most immediately concerned." Thus we find that from the very organization of the Government the full control and jurisdiction over all streams and other waters, and the beds or soil under those waters, was left entirely to the States then going to make up this Government; and to the States, which were afterward admitted to the Union, were given equal rights in this respect. Hence it follows that a State, either in its constitution or by legislative enactment, may provide that all the waters within its boundaries shall become the property of the public, and such a provision has the effect of a solemn dedication of these waters to the public, to be regulated and controlled as the State legislature may see fit, subject to the two exceptions above mentioned and vested rights at the time of such dedication.

§ 375. Powers of a State to dedicate its waters—Limitations to the rule.—As we stated in the previous section,¹ the power of a State to dedicate the waters flowing within its boundaries is subject to two limitations: First, the power of the general Government to preserve the navigable capacity of the navigable waters of the United States; and, second, the rights of the general Government as a riparian owner in those waters adjoining lands and reservations still owned by it. We have discussed the first limitation in a separate chapter,² and there stated to the effect that the

⁶ For the law of State control, see Chap. 68.

⁷ 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529.

¹ See Sec. 374.

² For the right of the Government to protect the navigable capacity of the navigable waters of the United States, see Chap. 16, Secs. 349-356.

general Government of the United States had reserved the power to protect the navigable capacity of the public waters of the United States, even as against all State action.³ The jurisdiction of the United States over the navigable waters of the United States, and over the public lands and reservations and the waters running through them, vests in the Government the right to take all needed measures, not only to preserve the navigability of the water courses of the country, but also to reserve such waters as may be necessary to preserve those lands from becoming barren wastes, especially those lands which have been set apart as Indian reservations, occupied and inhabited by the Indians, and the water used in irrigating them, even against the action of any State in dedicating those waters to the public. That the Government has not always exercised its rights in these respects, and has permitted certain State doctrines to grow up relative to the ownership and jurisdiction of these very waters, will be discussed in a subsequent portion of this work.⁴ Whether the Government will make any further claims upon these waters for any other than the purposes mentioned remains to be seen, but we are firmly of the opinion that it may, as far as any State dedication is concerned. Such a dedication by a State to itself, as far as the general Government is concerned, to the extent at least of the above limitations and reservations, is of no effect, and the Government may step in and claim its rights in the face of a State dedication.

There is another limitation in the power of a State to dedicate its waters to itself or to the public, which will be discussed in another portion of this work, and that is in the case of the dedication of waters known as interstate waters.⁵ It was at least strongly intimated in the case of *Kansas v. Colorado*,⁶ in the face of the constitutional dedication of all the waters within its boundaries by the State of Colorado to the public, that the waters of the Arkansas River, which rises in Colorado and flows down through Kansas, could not all be claimed by the State of Colorado, and that the time might come when such waters might have to be apportioned between the two States upon some equitable basis.

³ See Secs. 343, 352.

⁵ For interstate waters, see Chap. 64.

⁴ For the growth of the irrigation systems in the Western States, see Chap. 11, Secs. 238-264.

⁶ 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

§ 376. **Early dedication.**—We find that long before the Western theory of appropriation was thought of, and before this Government was formed, certain waters were dedicated by the Colonies to the public, and this gave the public the right to make common use of these waters the same as they could use any of the other public waters. Massachusetts, by the Colonial ordinance of 1641 to 1647, dedicated the title of all ponds within its jurisdiction containing more than ten acres to the public.¹ Upon the formation of the Government, and since, this was counted as a reservation of these waters in the public, which had the right to make common use of them, including the right to fish, gather ice, and also to use the water for domestic, agricultural, and manufacturing purposes, so long as the water of the pond was not drawn below its natural level.² This rule, adopted in Massachusetts, was followed in other States at an early day, notably Maine³ and New Hampshire.⁴ As we shall see in the following sections, the Western States have, in the main, availed themselves of this power of dedication, either by constitutional provisions or by legislative enactment.⁵

§ 377. **States which have dedicated their waters.**—A number of the States, especially in the Western portion of this country, have declared, either in their constitutions or by legislative enactment, or both, that all the waters within the respective States are the property of the public or of the State. The language of these provisions adopted in the various States varies somewhat; and, in order to have a full understanding as to the effect of these provisions, we will discuss the entire subject in this chapter. Those States which have constitutional provisions upon this subject are California,¹ Colorado,² Idaho,³ Montana,⁴ New Mexico,⁵ North

¹ See Sec. 299.

² *Potter v. Howe*, 141 Mass. 357, 6 N. E. Rep. 233; *West Roxbury v. Stoddard*, 7 Allen 158; *Atty. Gen. ex rel. Mann v. Revere Copper Co.*, 152 Mass. 444, 25 N. E. Rep. 605, 9 L. R. A. 510; *Watuppa Res. Co. v. Fall River*, 147 Mass. 548, 18 N. E. Rep. 465, 1 L. R. A. 466.

³ *Auburn v. Union Power Co.*, 90 Me. 576, 38 Atl. Rep. 561, 38 L. R. A. 188.

41—Vol. I—Kin. on Irr.

⁴ *Concord Mfg. Co. v. Robertson*, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679.

⁵ See Secs. 377-385.

¹ See Sec. 378.

² Sec. 379.

³ Sec. 380.

⁴ Sec. 381.

⁵ Sec. 382.

Dakota,⁶ Washington,⁷ and Wyoming.⁸ Some of these States, as will be noticed, have both constitutional provisions and legislative enactments. Those States which have adopted provisions, of this nature by legislative enactment only, are Arizona, Nebraska, Nevada, Oklahoma, Oregon, South Dakota, and Utah.⁹ We will now take up these provisions in detail of the various States in the order named. It will be noticed that the extent of the dedication varies greatly according to the language used in the respective States.

§ 378. **Dedication by California—Partial by the constitution and total by late statute.**—The constitution of California, in Article 14 provides upon the subject under discussion as follows:

“Sec. 1. The use of all water now appropriated, or that may be hereafter appropriated, for sale, rental, or distribution, is hereby declared to be a public use, and subject to the regulations and control of the State, in the manner prescribed by law.” The rest of the section applies to the fixing of rates of compensation to be collected for the use of water supplied to any city, town, or the inhabitants thereof.

“Sec. 2. The right to collect rates of compensation for the use of water supplied to any county, city and county, or town, or the inhabitants thereof, is a franchise and can not be exercised except by authority of and in the manner prescribed by law.”

It will be noticed by the above provisions of the constitution there was but a limited dedication to the public. The provisions apply only to *all waters now appropriated, or that may be hereafter appropriated, for sale, rental, or distribution*, and these were declared to be a public use. They do not apply to the water running in the streams not appropriated, neither do they apply to the water appropriated by private individuals or corporations for their own use.¹ They do not give the general public any additional rights in the fishing or hunting of the streams or any other rights which the public have in what are known in law as public waters, except subjects hereinafter mentioned. Neither do they in any way interfere with the riparian rights so strenuously insisted upon in the

⁶ Sec. 383.

⁷ Sec. 384.

⁸ Sec. 385.

⁹ For these provisions, see Sec. 386.

¹ Stanislaus W. Co. v. Bachman, 152 Cal. 716, 93 Pac. Rep. 858, 15 L. R. A., N. S. 359.

State of California. It was not left to the legislature to say whether the waters appropriated for sale, rental, or distribution should be a public use or not, but the constitution itself declares them to be such, and then makes the use subject to the regulation and control of the legislature.² As was said in the case of *Merrill v. Southside Irrigation Co.*,³ "The evident intent of the framers of our constitution was to strike a blow at monopolies which had grown up out of the sale, rental, and distribution of water, and, by declaring such use a public use to bring it within the control of the local authorities in municipalities where the burdens of the system were most onerous." The provisions, however, are general, and apply to all parties supplying water, and not merely to those who have acquired the ownership thereof by appropriation on the public lands. This phase of the provisions of the constitution will be more thoroughly discussed in a subsequent portion of this work, under the subjects of water rates,⁴ and public service corporations.⁵

Again, under these provisions it is held that the distribution of water to farming communities under the district irrigation law of the State is a public use.⁶ It will be observed that there is a very marked distinction between the provisions of the constitution and those of Colorado, where all water within the State, not theretofore appropriated, upon the adoption of the constitution, was "declared to be the property of the public."⁷ But the legislature of California, evidently alarmed because of the threatened appropriation of certain waters within the State and their diversion for use in other States, by the Act of April 8, 1911, amending section 1410 of the Civil Code,⁸ provided that: "All water or the use of water

² *People v. Stephens*, 62 Cal. 209.

³ 112 Cal. 426, 44 Pac. Rep. 720.

⁴ See Chap. 69.

⁵ See *Companies and Corporations*, Chaps. 572-577.

⁶ See, for California District Law, Sec. 1390; *Fallbrook Irr. District v. Bradley*, 164 U. S. 112, 41 L. Ed. 369, 17 Sup. Ct. Rep. 56, reversing *Id.*, 68 Fed. Rep. 948.

See, also, for right of eminent domain under the Cal. Const., Part XIV, California.

⁷ For the constitutional provisions of Colorado, see Sec. 379.

See, also, *Fresno Canal & Irr. Co. v. Park*, 129 Cal. 437, 62 Pac. Rep. 87. See *San Diego Flume Co. v. Souther*, 90 Fed. Rep. 164, 32 C. C. A. 548, 61 U. S. App. 134; *Id.*, 104 Fed. Rep. 706, 44 C. C. A. 143.

For the construction by the Courts of the California Constitution, see Part XIV.

⁸ Supp. Kerr's Codes, 1911, p. 584; Stats. and Amdts., 1911, p. 421.

See, also, sections under California, Part XIV.

within the State of California is the property of the people of the State of California," etc.⁹ This provision contains an absolute dedication of the waters of the State to the people of the State.

§ 379. Dedication by Colorado—Total dedication by the constitution.—The State of Colorado, in its constitution, went to a much greater extent in the matter of dedicating its waters to the public than did California.¹ Article 16 of the Colorado constitution provides as follows:

"Sec. 5. The water of every natural stream, not heretofore appropriated, within the State of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the State, subject to appropriation as hereinafter provided.

"Sec. 6. The right to divert unappropriated waters of any natural stream for beneficial uses shall never be denied." The rest of the section relates to priorities and order of uses.

This provision makes the waters of every natural stream within the State of Colorado, public, or *publici juris*, "the gift of God to all His creatures."² They are dedicated to the use of the people, to be used by them in such manner as other public waters may be used by the people. However, this use of the people must be deemed subject to two limitations upon the part of the United States, and one provided for in the provision of the Colorado constitution itself, quoted above. The limitations upon the part of the United States are, that the navigable capacity of the navigable waters of the United States,³ and the right of the United States, as the owner of lands bordering on a stream, within the State, to the continued flow of its waters, so far, at least, as may be necessary for the beneficial uses of the Government property, must not be impaired.⁴ The limitation provided for in the constitution is that of appropriation for beneficial purposes; but, until the waters are appropriated

⁹ For rest of section, see California, Part XIV.

¹ For the partial dedication by California, see Sec. 378.

² *Mohl v. Lamar Canal Co.*, 128 Fed. Rep. 776.

³ As to what are navigable waters of the United States, see Sec. 348.

⁴ *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

See, also, Sec. 388.

and diverted from the streams, they belong to the public. No stronger words could have been used in the dedication of any right to the people than were used in this provision of the constitution. After an appropriation has been made, of course, the water belongs to the party appropriating it; but, as long as the waters flow in their natural streams, the general public have the same rights in them that are accorded to the public in all other public waters.⁵ The office of the State is then regulative, under its police powers, and the legislature is authorized to pass such laws, regulating the use of the waters, so long as they remain public, or after they become private by virtue of an appropriation, as will not impair the rights of the public, or conflict with the constitutional provision.⁶ But in this connection, the Colorado Court has held that such a constitutional provision can not give an appropriator of water for irrigation a priority as against appropriators for other purposes, acquired prior to its adoption.⁷

⁵ For the rights of the public in public waters, see Secs. 324-340.

⁶ *Roberson v. People ex rel. Soule*, 40 Colo. 119, 90 Pac. Rep. 79; *Schilling v. Rominger*, 4 Colo. 100; *Farmers' etc. Co. v. Southworth*, 13 Colo. 111, 21 Pac. Rep. 1028, 4 L. R. A. 767; *Coffin v. Left Hand D. Co.*, 6 Colo. 443; *White v. Farmers' etc. Co.*, 22 Colo. 191, 43 Pac. Rep. 1028, 31 L. R. A. 828; *Oppenlander v. Left Hand D. Co.*, 18 Colo. 142, 31 Pac. Rep. 854; *Wheeler v. Northern Colo. Irr. Co.*, 10 Colo. 582, 17 Pac. Rep. 487; *Lamson v. Vailes*, 27 Colo. 201, 61 Pac. Rep. 231; *Ft. Lyon Canal Co. v. Chew*, 33 Colo. 392, 81 Pac. Rep. 37.

See, also, right of State to fix rates for water, Secs. 1368-1385.

See, also, right of public to hunt and fish in and on public waters, Secs. 361-363.

See, also, right to hunt and fish on the public waters, Chap. 17, Secs. 358-371; *U. S. Freehold Land & Em. Co. v. Gallegos*, 1 Denver Legal Adv. 412; *Ft. Morgan Land & Canal Co. v. South Platte D. Co.*, 18 Colo. 1, 30

Pac. Rep. 1032, 36 Am. St. Rep. 259.

⁷ *Colorado Mill & El. Co. v. Larimer & W. Irr. Co.*, 26 Colo. 47, 56 Pac. Rep. 185.

See, also, *Crippen v. White*, 28 Colo. 298, 64 Pac. Rep. 184, where the Court held that by the adoption of the common law by the Colorado constitution it did not include the doctrine of riparian rights, since that doctrine was wholly inapplicable in that State.

See, also, as to preference uses, *Broadmoor Dairy & Live Stock Co. v. Brookside W. & Imp. Co.*, 24 Colo. 541, 32 Pac. Rep. 792; *Armstrong v. Larimer County D. Co.*, 1 Colo. App. 49, 27 Pac. Rep. 235; *Strickler v. Colorado Springs*, 16 Colo. 61, 26 Pac. Rep. 313, 25 Am. St. Rep. 245; *Montrose Canal Co. v. Loutsenheizer D. Co.*, 23 Colo. 233, 48 Pac. Rep. 532.

For the construction of the Wyoming constitution where the dedication is to the "State," see Sec. 385.

For the further construction of the Colorado constitution by the Courts, see Chap. 87.

But see *Hartman v. Tresise*, 36

The construction of the Federal Court has not always been consistent with the construction of the State Courts, relative to the extent of the dedication of the waters of the State to the public, as provided for by the constitution. In the case of *Schwab v. Beam*,⁸ Hallett, District Judge, held that there was nothing in the constitution of Colorado, or in the law relating to irrigation, which modifies or changes the rule of common law that for manufacturing, mining, or mechanical purposes each riparian owner may use the waters of running streams on his own premises, allowing such waters to go down to subjacent owners in their natural channel. He held that the waters of a certain stream were appropriated when certain placer mining claims were located, "and the owner of the claims is entitled to have them *ut currere solebat*, without diminution, subject to the reasonable use of other riparian owners higher up on the course of the stream."⁹

§ 380. Dedication by Idaho—Total dedication by constitution and statute.—Idaho expressly establishes the law of prior appropriation as the law of that State, by the following constitutional provisions in Article 15:

"Sec. 1. The use of all waters now appropriated, or that may hereafter be appropriated, for sale, rental, or distribution, also all water originally appropriated for private use, but which, after such appropriation, has heretofore been made, or may hereafter be sold, rented, or distributed, is hereby declared to be a public use, and subject to the regulation and control of the State in the manner prescribed by law." Sections 2 to 6 of Article 15 also provide that

Colo. 146, 84 Pac. Rep. 685, 4 L. R. A., N. S. 872; also see dissenting opinion in same case by Mr. Justice Bailey, which opinion we deem to be the correct exposition of the law upon the subject. See, also, Sec. 367.

See, also, for the construction of the Colorado constitution, by other Courts, *San Diego Flume Co. v. Souther*, 90 Fed. 164; *Fresno Canal & Irr. Co. v. Park*, 129 Cal. 437, 62 Pac. Rep. 87; *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am.

St. Rep. 918; *Wyatt v. Larimer & Weld Irr. Co.*, 1 Colo. App. 480, 29 Pac. Rep. 906, where the Court held that the expression in the constitution, "property of the public," means that the State holds the title to the waters, in trust for the appropriators. *Wilterding v. Green*, 4 Idaho 773, 75 Pac. Rep. 134.

⁸ 86 Fed. Rep. 41.

⁹ See, also, *Hartman v. Tresise*, 36 Colo. 146, 84 Pac. 658, 4 L. R. A., N. S. 872.

the right to collect water rates is a franchise; that the right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses shall never be denied; that priority of appropriation gives the better right; the regulation of priorities as to the uses of water; that the legislature may provide a mode for fixing rates for water.¹

The statutes of Idaho also contain the following provision: "All waters of the State when flowing in their natural channels, including the waters of all natural springs and lakes within the boundaries of the State, are declared to be the property of the State."²

By the Supreme Court of the State it was held that the constitutional provisions did not pretend to assume the control of or interfere with private property rights, but declares that the *use* of all such waters, whether theretofore or thereafter appropriated, is a public use and under the control of the State.³ The dedication in the constitution has been defined by the Supreme Court in the following language: "In this connection it should be remembered that a dedication within the purview of the constitution is commensurate only with the character and kind of the waters dedicated and the use and regularity of the use to which they are applied."⁴ It is well to note at this point the inconsistency of the Idaho laws in respect to the waters of the State, and the ownership of the soil or beds under the water courses and streams. After abolishing all of the common law theories as to riparian rights by constitutional and legislative provisions, and contrary to the weight of authority on meandered streams,⁵ the Supreme Court of Idaho, in a bit of judicial legislation, declares that in that State the doctrine is announced that a riparian owner upon the streams of that State, *both navigable and non-navigable*, takes to the thread of the stream, subject, however, to an easement for the use of the public.⁶

1 See, for Laws of Idaho, Part XIV.

2 Rev. Codes of Idaho, 1908, Sec. 3240; Civil Code of Idaho, 1901, Sec. 2625.

3 Wilterding v. Green, 4 Idaho 773, 75 Pac. Rep. 134; Bear Lake County v. Budge, 9 Idaho 703, 75 Pac. Rep. 614, 108 Am. St. Rep. 179.

4 Niday v. Barker, 16 Idaho 703, 101 Pac. Rep. 254.

See, also, Bear Lake etc. Co. v. Budge, 9 Idaho 703, 75 Pac. Rep. 614, 108 Am. St. Rep. 179.

5 For ownership of the beds of navigable meandered streams in public land States, see Secs. 330-339.

6 Johnson v. Johnson, 14 Idaho 561, 95 Pac. Rep. 499, 24 L. R. A., N. S. 1240; Lattig v. Scott, 17 Idaho 506, 107 Pac. Rep. 47.

§ 381. **Dedication by Montana—Partial.**—The constitutional provision of Montana upon this subject is the same as that of California, with the exception of the last clause relative to rights of way. Article 3, section 15, provides as follows:

“Sec. 15. The use of all water now appropriated, or that may hereafter be appropriated, for sale, rental, distribution, or other beneficial use, and the right of way over the lands of others for all ditches, drains, flumes, canals; and aqueducts necessarily used in connection therewith, as well as the sites for reservoirs necessary for collecting and storing the same, shall be held to be a public use.”

This provision, as was the case in the California constitution,¹ contains a dedication of but a portion of the waters within the State to the public. As was said in the case of *Smith v. Deniff*,² “The use of the appropriated water is made a public use.”³ The opinion is somewhat inconsistent with itself, for in an earlier portion the Court says, “The State of Montana has by necessary implication assumed to itself the ownership, *sub modo*, of the rivers and streams of this State.”

§ 382. **New Mexico—Total dedication by the constitution and statutes.**—Article 16 of the new Constitution of New Mexico, after providing for the recognition of all existing rights, in Section 2, also provides: “The unappropriated water of every natural stream, perennial or torrential, within the State of New Mexico, is hereby declared to belong to the public,” etc.¹ By the Act of the Territorial legislature of 1907, it was also provided: “All natural waters flowing in the streams and water courses, whether such be perennial, or torrential, within the limits of the Territory of New Mexico, belong to the public and are subject to appropriation for beneficial use.”²

¹ For provision in Cal. Const., see Sec. 378.

² 23 Mont. 65, 57 Pac. Rep. 557; 24 Mont. 20, 60 Pac. Rep. 398, 50 L. R. A. 737.

³ See, also, *Ellinghouse v. Taylor*, 19 Mont. 462, 48 Pac. Rep. 757.

¹ For the other provisions of the New Mexico constitution, see Part XIV.

² Laws, 1907, Chap. 49, p. 71, Sec. 1. For the construction of the New Mexico statutes, see Part XIV.

See, also, *Trambley v. Luterman*, 6 N. M. 15, 27 Pac. Rep. 312.

§ 383. Dedication by North Dakota—Total by the constitution.—In the constitution of North Dakota in Article 17 may be found the following:

“Sec. 210. All flowing streams and natural water courses shall forever remain the property of the State for mining, irrigating, and manufacturing purposes.”¹

In the statutes of the State we also find the following: “All waters within the limits of the State from all sources of water supply belong to the *public*, and, except as to navigable waters, are subject to appropriation for beneficial use.” It will be noticed that in the constitution the word “State” is used, while in the statute is found the word “public.”²

§ 384. Dedication by Washington—Partial by the constitution.—The Washington constitution provides as follows:

“Art. 21. The use of the waters of this State for irrigation, mining, and manufacturing purposes shall be deemed a public use.”

This, as will readily be seen, is but a partial dedication of but a portion of the waters to the public, the water used for irrigation, mining, and manufacturing purposes. There is nothing granted to the public except the use of the water appropriated for the purposes mentioned in the article, and when the waters are used for these purposes this use is declared to be a public one.¹ It was held by the Supreme Court of the State that the above section of the constitution is in conflict with the due process clause of the Federal Constitution to the extent of taking private property for uses essentially private.²

¹ See for construction, *Biglow v. Draper*, 6 N. D. 152, 69 N. W. Rep. 570, where it was held that the declaration of State ownership of all its waters did not prevent the existence of riparian rights.

² See, upon this subject, Sec. 372.

¹ See *Eminent Domain*, Secs. 1059-1098.

² *Tacoma Industrial Co. v. White River Power Co.*, 39 Wash. 648, 82 Pac. Rep. 150, 2 L. R. A., N. S. 842.

See *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A.

107, 61 Am. St. Rep. 912, where the Court held that the doctrine of appropriation of water in that State applies only to the public lands, and not to lands which have become private property.

See, also, *Nielson v. Spooner*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *Prescott Irr. Co. v. Flathers*, 20 Wash. 154, 55 Pac. Rep. 635, where it was held that the condemnation of land for an irrigation ditch constitutes a public use; *Kalez v. Spokane Valley etc. Co.*, 42 Wash.

§ 385. **Dedication by Wyoming**—Total dedication by the constitution.—The constitution of Wyoming upon this subject, as found in Articles 2 and 8, is as follows:

“Sec. 31. Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the State, which, in providing for its use, shall equally guard all the various interests involved.” Sections 32 and 33 then provide for the right of eminent domain, which will be discussed in a subsequent portion of this work.¹

“Art. 8, Sec. 1. The water of all natural streams, springs, lakes, or other collections of still water within the boundaries of the State are hereby declared to be the property of the State.” Sections 2, 3, 4, and 5 provide for the State control, priority of appropriation, water divisions, and the duties of the State engineer, which subjects will also be hereafter discussed.²

The constitution of Wyoming contains the most elaborate provisions upon the subject of waters of any of our States, and as far as the dedication is concerned, as set forth in Article 8, Section 1, *supra*, it largely follows the constitution of the State of Colorado, and the dedication to the State is absolute, although it goes to a greater extent in including the waters of springs, lakes, and other collections of still water. Another distinction is that under the Colorado constitution the rights of the public are made subject to the right of appropriation, while under the Wyoming constitution the rights of the State are not subject to anything, but are under the full control of the State. In fact the right of appropriation may be denied “when such denial is demanded by the public interests.”³ The entire control as provided for in Article 2, Section 31, is left absolutely in the State. Another distinction, which may be called one without a difference, is the fact that the dedication in the Colorado constitution runs to the people, while in Wyoming, it runs to the State. The ownership of the State is for the benefit of the public or people. By either phrase, “property of the public” or

43, 84 Pac. Rep. 395, holding that the State can make use of the waters or body of a navigable lake and confer rights of irrigation therein.

For the further construction of the Washington constitution and statutes, see Part XIV.

¹ See Chap. 55, Secs. 1059-1098.

² See, for State Control, Chap. 68. Also, for the laws of the State of Wyoming, see Part XIV.

³ Art. 8, Sec. 3.

"property of the State," the State, as representative of the public or the people, is vested with the jurisdiction and control of the waters named in the constitution in its sovereign capacity.⁴ As a result of the above provisions in the constitution, the State of Wyoming has declared in as strong language as it is possible for a State constitution to declare, that the right to the use of the waters within the State depends upon the prior appropriation for beneficial purposes; and that the common law doctrine of riparian rights in the natural streams and other waters does not prevail in that State. "The waters become perforce *publici juris*."⁵ The rights of the State, or public, under the Wyoming constitution, are also subject to the rights of the General Government to maintain the navigable capacity of all the navigable waters of the United States,⁶ and the right to the use of the water flowing through Government lands, as may be necessary for the Government property.⁷ In the adoption of both this and the Colorado constitution, the rights of the Government seem to have been entirely overlooked.⁸

§ 386. Statutes of States not having constitutional provisions.—The most of the States and Territories of the arid West have statutory provisions upon the subject of declaring the waters within their respective jurisdictions the property of the public, or of the

⁴ *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918, citing *Kinney on Irr.*, 1st Ed., Secs. 51, 53; *Moyer v. Preston*, 6 Wyo. 308, 44 Pac. Rep. 845, 71 Am. St. Rep. 914.

See, also, *McCready v. Virginia*, 94 U. S. 391, 24 L. Ed. 248; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 999; *Bell v. Gough*, 23 N. J. L. 624, where the Court said, "The sovereign is trustee for the public"; *Miller v. Mendenhall*, 43 Minn. 95, 44 N. W. Rep. 1141, 8 L. R. A. 89, 19 Am. St. Rep. 219; *Wheeler v. Northern Colo. Irr. Co.*, 10 Colo. 582, 17 Pac. Rep. 487; 3 Am. St. Rep. 603.

For the dedication to the public by Colorado, see Sec. 379.

⁵ *Willey v. Decker*, 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

⁶ For the Right of Navigation, see Secs. 341-356.

⁷ For effect of dedication as against the rights of the United States, see Sec. 388.

See, also, *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 41, 51 L. Ed. 953, 27 Sup. Ct. Rep. 655.

⁸ See Sec. 379.

State, besides those States having constitutional provisions to that effect, which have been discussed in the preceding sections.¹

In the statutes of Arizona, we find the following: "All rivers, creeks, and streams of running water in the Territory of Arizona are hereby declared public, and applicable to the purposes of irrigation and mining as hereinafter provided."²

The Nebraska statute has the following declaration of State ownership: "The water of every natural stream not heretofore appropriated, within the State of Nebraska, is hereby declared to be the property of the public, and is dedicated to the use of the people of the State, subject to appropriation as hereinbefore provided."³ Before the passage of the above Act Nebraska had adopted the common law rule of waters, and it was held in the case of Crawford County v. Hall,⁴ that the Irrigation Acts of 1889 and 1895 abrogated the law of private riparian rights as theretofore existing, but that the Acts could not, and did not, have the effect of abolishing riparian rights which had already accrued.⁵

In Nevada there was the following: "All natural water courses and natural lakes and the waters thereof which are not held in private ownership belong to the State, and are subject to regulation and control by the State."⁶ Also later it was provided that all waters not held in private ownership were declared to "belong to the public," and the use thereof a public use.⁷ And also, again, to the same effect by the Act of 1907 practically the same provisions were re-enacted. "All natural water courses and natural lakes and the waters thereof which are not held in private ownership, belong to the State, and are subject to appropriation for beneficial uses."⁸

The statutes of Oklahoma upon the subject of dedication declare

¹ For Constitutional Provisions, see Secs. 378-385.

² Rev. Stat. Arizona, 1901, Sec. 4174 (Civil Code).

For construction of section, see *Boquillas Land & Cattle Co. v. Curtis*, 11 Ariz. 128, 89 Pac. Rep. 504; *aff'd*, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493; *Clough v. Wing*, 2 Ariz. 371, 17 Pac. Rep. 453.

³ Comp. Stats. Neb., 1911, Sec. 6450.

For the construction of the Nebraska statutes, see Part XIV.

⁴ 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889.

⁵ See, also, *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

See, also, Part XIV, Nebraska.

⁶ Comp. Laws Nevada, 1900, Sec. 354.

⁷ Nevada Stats. 1903, p. 24, Sec. 1.

⁸ Nevada Stats. 1907, p. 30; Rev. Laws Nevada, 1912, Sec. 4672.

For construction, see *Reno Smelting Co. v. Stevenson*, 20 Nev. 269, 21 Pac.

as follows: "The unappropriated waters of the ordinary flow or underflow of every running stream or flowing river, and the storm or rain waters of every river or natural stream, canyon, ravine, depression, or watershed within those portions of the State of Oklahoma in which by reason of the insufficient rainfall, or by reason of the irregularity of the rainfall, irrigation is beneficial for agricultural purposes, are hereby declared to be the property of the public, and may be acquired by appropriation for the uses and purposes and in the manner as hereinafter provided."⁹ This is a dedication of but a part of the waters of the State, or the waters of that portion of the State where irrigation is needed.

Upon this subject the Oregon statutes contain the following: "All water within the State from all sources of water supply belongs to the public."¹⁰ "The use of the water of the lakes and running streams of the State of Oregon, for general rental, sale, or distribution for purposes of irrigation, and supplying water for household and domestic consumption, and watering of live stock upon dry lands of the State, is a public use, and the right to collect rates or compensation for such use of said water is a franchise."¹¹ It is also further declared: "The use of the water of the lakes and running streams of the State of Oregon for the purposes of developing the mineral resources of the State and to furnish electric power for all purposes, is declared to be a public beneficial use and a public necessity," etc.¹²

The South Dakota statute has the declaration as follows: "All waters within the limits of the State from all sources of water supply belong to the public, and, except as to navigable waters, are

Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364; *Twaddle v. Winters*, 29 Nev. 88, 85 Pac. Rep. 280, 89 Pac. Rep. 289.

For the construction of the Nevada statutes, see Part XIV.

⁹ Comp. Laws of Oklahoma, 1909, Sec. 3915.

For the other laws of Oklahoma and their construction, see Sec. 96.

See *Gates v. Settlers' etc. Co.*, 19 Okla. 83, 91 Pac. Rep. 856.

¹⁰ Lord's Oregon Laws, Sec. 6575.

¹¹ Lord's Oregon Laws, Sec. 6525; *Bellinger & Cotton*, Stat. Oregon, 1902, Sec. 4993.

See, also, for the Oregon statutes and their construction, Part XIV.

See, also, *Umatilla Irr. Co. v. Barnhart*, 22 Ore. 391, 30 Pac. Rep. 37.

¹² Lord's Oregon Laws, Sec. 6551; *Grande Ronde Elec. Co. v. Drake*, 46 Ore. 243, 78 Pac. Rep. 1031; *City of McMinnville v. Howenstein*, 56 Ore. 451, 109 Pac. Rep. 81.

subject to appropriation for beneficial use.”¹³ It will be noticed that this section is the same as the statutory provision of North Dakota.¹⁴

The Texas law has gone to a somewhat further extent than some of the States mentioned, its statutes providing as follows: “The unappropriated waters of the ordinary flow of every running or flowing river or natural stream, and the storm or rain waters of every river or natural stream, canyon, ravine, depression, or watershed within those portions of the State of Texas in which, by reason of the insufficient rainfall, or by reason of the irregularity of the rainfall, irrigation is beneficial for agricultural purposes, are hereby declared to be the property of the public, and may be acquired by appropriation for the uses and purposes and in the manner as hereinafter provided.”¹⁵ It will be noticed that the statute of Texas is peculiar in that there is an absolute dedication of all the waters to the public only for a portion of the State. This is due to the difference in the physical conditions in different portions of the State.¹⁶

The Utah statutes provide: “The water of all streams and other sources in this State, whether flowing above or under ground, in known or defined channels, is hereby declared to be the property of the public, subject to all existing rights to the use thereof.”¹⁷

“The use of water for beneficial purposes, as provided in this title, is hereby declared to be a public use.”¹⁸

§ 387. Effect of dedication by the States—Different doctrines.—It will be noticed that in the dedication to the State, or public, the constitutions and statutes of the respective States, quoted in the

¹³ Session Laws, 1905, Chap. 132, p. 201.

See *Lone Tree Co. v. Cyclone Co.*, 15 S. D. 519, 91 N. W. Rep. 352; *Id.*, 26 S. D. 307, 128 N. W. Rep. 596.

¹⁴ For the dedication by North Dakota, see Sec. 383.

¹⁵ Sayles' Civil Stats. Texas, 1900, Sec. 2138, Art. 3115.

See, also, statutes of Oklahoma, *supra*.

For the statutes of Texas and their construction, see Sec. 101.

¹⁶ See Part XIV.

¹⁷ Comp. Laws of Utah, 1907, Sec. 1288x18.

¹⁸ Comp. Laws of Utah, 1907, Sec. 1288x21.

See *Stalling v. Ferrin*, 7 Utah 477, 27 Pac. Rep. 686.

For the statutes of Utah and their construction, see Sec. 102.

preceding sections, vary greatly in the terms used.¹ In California, prior to the enactment of the amendment of Section 1410 of the Civil Code in 1911,² there was but a partial dedication of but a portion of the waters of the State, while in Colorado and Wyoming there are constitutional provisions containing a dedication of all the waters in the respective States to the public or State, in language as strong as can be made. Barring the recent dedication by the State of California, as it is too early to note the effect, these two States may be cited as the two extremes, involving the subject of the dedication of its waters by a State. As to the remaining States named, some follow in certain features the California dedication, and others Colorado and Wyoming, while still others take positions somewhere between, depending largely as to whether or not it was the object to abolish the common law of riparian rights.³

As we have seen, it is left to each State to adopt whatever rule it sees fit relative to the use and control of the waters within its jurisdiction, so long as the rights of the Government are in no way impaired.⁴ And, as there was no general rule or guide upon the subject which a State was bound to follow, each State has adopted a rule of its own. In fact, there are no two States where the laws are the same. Some States may follow California in their main features, others may follow Colorado, but it will be discovered that each State has independent features of its own; and hence it follows that no State has a rule which in all of its features will apply to any other State. The different grants in the dedications of the waters, of course, give different rights to the use of those waters, either by the public or by individuals. And these dedications, either being in the constitutions or by positive legislative enactment, are the fundamental laws upon the subject, and they themselves being different, have led to the enactment of different laws and different systems in various States. There are, however, many features in common, which will be discussed in the subsequent portions of this work. But to speak of the California rule or doctrine, or the Colorado rule or doctrine, is incorrect, unless the expression is used in the popular sense, except as the

¹ See Secs. 378-386.

² See Supp. Kerr's Codes, 1911, p. 584; Stats. and Amdts., 1911, p. 421.

See, also, Part XIV.

³ For Riparian Rights, see Secs. 450-551.

⁴ See Secs. 330, 354-356.

same may apply to the particular States of California or Colorado themselves, as each State has a rule or doctrine of its own. There is, however, the doctrine of State control or the State administration of waters, which is based upon the dedication of the waters within a State, either to the State itself or to the public, and has been adopted by many of the Western States. But even the laws of State control differ greatly in the different States. Different rights are granted, different methods of the appropriation of water provided for, and entirely different powers given to the State officers who administer the law upon the subject. This subject, however, will be more thoroughly discussed in future portions of this work.⁵

The effect of the dedication of the waters of a State to the State or to the people confers no ownership of title in the running waters flowing within such respective jurisdictions. Neither the United States, a State, nor an individual can, under the law, acquire any absolute ownership or title to the waters flowing in their natural channels. As has been discussed in previous sections, the only right that can be acquired by any one is usufructuary. Again, such a dedication confers upon the State no absolute title or right even to the use of such waters. The public ownership, if any distinction is made, is rather that of sovereign than that of a proprietor. Therefore, such a declaration confers upon the State the power of administration or regulation of the waters flowing within its boundaries, and also the power of regulating the appropriation and use of such waters as between the respective individual claimants thereto. In other words, the State acts under these terms of dedication in its sovereign capacity only, and not as proprietor or owner of the water. As was said in a leading Wyoming case upon the subject:⁶ "The obvious meaning and effect of the expression, that the water is the property of the public, are that it is the property of the people as a whole. Whatever title, therefore, is held in and to such waters resides in the sovereign as the representative of the people. The public ownership, if any distinction is material, is rather that of sovereign than proprietor. That own-

⁵ For the doctrine of State control or State administrative laws, see Chap. 68.

⁶ For the statutes of the various States upon the subject, see Part XIV.

⁶ Willey v. Decker, 11 Wyo. 496, 100 Am. St. Rep. 939, 73 Pac. Rep. 210.

ership, however, is subject to a particular trust or use, specially defined in the statutes and in the constitutions." 7

In a Montana case,⁸ it is said: "The common law rule as to the rights of riparian owners would apply, were it not for the fact that the State of Montana has by necessary implication assumed to itself the ownership, *sub modo*, of the rivers and streams of this State." The expression, "*sub modo*," as used in this connection is, to say the least, indefinite, and there has been considerable speculation as to its intended meaning. The Supreme Courts of Montana and North Dakota, which States, as we have seen, have declarations of State ownership, hold that such a declaration is not antagonistic to and does not prevent the existence of riparian rights.⁹

§ 388. Effect of dedication—As against the rights of the United States.—The adoption in the constitution of a State, or the enactment by its legislature, of a provision that all the waters within the State are the property of the State or the public, can in no way affect the rights of the United States in and to those waters, but all rights acquired by the State must be subject to the rights of the general Government. These rights of the United States, which have been defined by the Supreme Court are: First, the right of the United States, as owner of the public lands, or reservations for any purpose, bordering on the streams, to the continued

⁷ See, also, *Fort Lyon etc. Co. v. Chew*, 33 Colo. 392, 81 Pac. Rep. 37; *Speer v. Stephenson*, 16 Idaho 707, 102 Pac. Rep. 365; *Roberson v. People ex rel. Soule*, 40 Colo. 119, 90 Pac. Rep. 79; *Farmers' etc. Co. v. Southworth*, 13 Colo. 111, 21 Pac. Rep. 1028, 4 L. R. A. 767; *White v. Farmers' etc. Co.*, 22 Colo. 191, 43 Pac. Rep. 1028, 31 L. R. A. 828; *Bear Lake etc. Co. v. Budge*, 9 Idaho 703, 75 Pac. Rep. 614, 108 Am. St. Rep. 179.

⁸ *Smith v. Denniff*, 24 Mont. 20, 60 Pac. Rep. 398, 50 L. R. A. 737, 81 Am. St. Rep. 408.

⁹ *Smith v. Denniff*, 24 Mont. 20, 60 Pac. Rep. 398, 50 L. R. A. 737, 81 Am. St. Rep. 408; *Bigelow v. Draper*,

6 N. D. 152, 69 N. W. Rep. 570, wherein it is said: "Such rights are under the protection of the fourteenth amendment to the Federal Constitution, which protects property against all State action that does not constitute due process of law. It follows that Sec. 210 of the State constitution would itself be unconstitutional in so far as it attempted to destroy those vested rights of property, if it should by construction be given a scope sufficiently wide to embrace such matters. For this reason we feel constrained to hold despite its broad language that Sec. 210 was not framed to divest the rights of riparian owners in the waters and beds of all natural water courses in the State."

flow of their waters; so far, at least, as may be necessary for the beneficial uses of the Government property, and that, too, whether these uses consist of what are known as the common law uses of riparian rights, or uses by appropriation of the waters for irrigating lands, or other beneficial uses. Second, the dedication is limited by the superior power of the general Government to secure unimpaired the navigable capacity of all navigable streams within the limits of the United States.¹

Relative to the first proposition, we shall see that the Government has all the rights of a private riparian owner in the waters which flow through the vast tracts of public lands and reservations owned by it.² This is upon the theory that the Government was the first owner of both the lands and the waters, and as such owner the riparian rights had vested before the lands had passed to private ownership or State rights had intervened. While these lands were within the boundaries of a Territory, the United States, being the only government which can impose laws upon them, has the entire dominion, or sovereignty, National and municipal, Federal and State, over all the Territories and the lands and waters within their boundaries, so long as they remain in a territorial condition.³ And hence it follows that the dedication by a State constitution, or by legislative enactment, of all its waters to the public can only be effective as to those waters in which the United States has no interest. Again, in the recent case of *Winters v. United States*,⁴ the Supreme Court of the United States took a still more advanced position. This case arose in the State of Montana and involved the rights of citizens of that State to divert and appropriate for irrigation the waters of Milk River, as against the rights of the Indians living upon a Government reservation, to appropriate the waters of the same river, also for the purpose of irrigation. The Court in holding that the claim of the Government

¹ *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Kansas v. Colorado*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Id.*, 206 U. S. 41, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Winters v. United States*, 207 U. S. 564, 22 L. Ed. 340, 28 Sup. Ct. Rep. 208; *United States v. Winans*,

198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548.

² See, for Government as a Riparian Owner, Sec. 480.

³ See *United States v. Winans*, *supra*, and cases cited.

⁴ *Supra*.

for the Indians was valid, said: "The power of the Government to reserve the waters and exempt them from appropriation under the State laws is not denied, and *could not be.*" This reservation of the waters was made, according to the record in the case, on May 1, 1888, and the State, upon its admission in 1889, acquired no right to the waters so reserved by its constitutional provision of dedication. And the Court further held that the reservation in the agreement with the Indians, whereby the waters of Milk River were not subject to appropriation by the citizens and inhabitants of Montana was *not* repealed by the Act of Admission, upon the theory advanced by the appellants, that otherwise the State would not be admitted "upon an equal footing with the original States."

In the case of *United States v. Conrad Inv. Co.*,⁵ the Circuit Court for the District of Montana held that the creation of an Indian reservation by the United States operated as a reservation of so much of the waters of a creek running through the land as might, *at any time in the future*, be required and could be utilized in carrying out the purposes of the treaty with the Indians; and that so long as the Government was administering the affairs of the Indians, it had the right to determine, as an administrative question, the quantity of water required and to take the same when and where it deemed necessary, the rights of any others to appropriate the water *being subject to such paramount right.*⁶ However, a State has full power to enact such laws as it sees fit, regulating and controlling the waters within its boundaries as far as its own internal affairs are concerned and the rights of its citizens. Congress can not enforce any rule in this respect upon any States.⁷

In fact, Congress itself, in the Act of June 2, 1902,⁸ commonly known as the National Reclamation or Irrigation Act, recognized this right. And, in Section 8, it was provided, that nothing in the

⁵ 156 Fed. Rep. 123.

⁶ This case was affirmed by the Circuit Court of Appeals, for which see *Conrad Inv. Co. v. United States*, 161 Fed. Rep. 829, 88 C. C. A. 647.

See, also, *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910; 108 Am. St. Rep. 697; *Crawford Co. v. Hall*, 67 Neb. 325, 93 N. W. 781, 60

L. R. A. 889, 108 Am. St. Rep. 647; *Richardson v. United States*, 100 Fed. 714; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁷ *Kansas v. Colorado*, *supra*.

⁸ 7 Fed. Stat. Ann. 1905, p. 1098; U. S. Comp. Stat. Supp. 1905, p. 349; 32 Stat. L. 388. For copy of the Act, see Chap. 65.

For the National Reclamation Act, see Chap. 65.

Act should be construed as affecting or intending to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, and that the Secretary of the Interior in carrying out the provisions of the Act should proceed in conformity with such laws.

A State, therefore, has the power to dedicate its waters to itself or to the public, as far as its own rights in those waters are concerned, and to regulate the use between its citizens. But to hold that a State constitutional convention or a State legislature could virtually appropriate all the waters flowing over the public domain and belonging to the United States to itself, and acquire a good title thereto, would be too much like holding that an individual could make a deed to himself of other people's property and acquire a good title thereto. But, as far as its own internal affairs are concerned, and the control and jurisdiction of the waters within the State among its own citizens, such a dedication in a State constitution is the fundamental law of the State.⁹

§ 389. Other effects of dedication.—As against all existing rights of the general Government, a dedication provision in a State constitution, or legislative enactment, has no effect whatever.¹ The Government can not be divested of its rights in that manner. But, as between the citizens of a State, or individuals or corporations of another State, claiming certain water rights within the boundaries of the State, a constitutional provision to this effect is the fundamental law. The statutory provision must also be considered the law upon the subject, so far as they do not conflict with the

⁹ See, also, the Act of March 1, 1911, Public, No. 435, U. S. Comp. Stat. Supp., 1911, p. 652; 36 Stat. L. 961, providing for the purchase of private lands along the watersheds of navigable streams in order to conserve their navigability, and wherein it is provided in Section 10, "And no right, title, interest, or claim in or to any lands acquired under this Act, or the waters thereon, or the products, resources, or use thereof, shall be initiated or perfected,

except in this section provided." And it nowhere provides in the section for the acquisition of water rights in waters flowing over these lands.

For the provisions of this Act, see Sec. 422.

¹ For dedication as against rights of Government, see Sec. 388.

For how the Government has disposed of part of its rights to water, see Arid Region doctrine, Secs. 611-626.

State constitution and the Constitution of the United States. In fact, the only advantage which a constitutional provision has over one enacted by the legislature upon this subject is that it is more liable to stand, being harder to repeal than an Act of the legislature, and the declaration in the Constitution itself that the use of the water is a public one, and therefore laying the foundation for an action in condemnation by virtue of the right of eminent domain.² Another effect of an absolute dedication of this nature is the abrogation of riparian rights. But, as we have seen, the terms of the dedication in the different constitutions vary greatly,³ hence, the extent of the abrogation of the common law of riparian rights also varies. In some of the States certain features of the common law are retained and others abolished. California endeavors to sustain both the common law doctrine of riparian rights and the doctrine of appropriation *in toto*. Idaho declares the use of its waters to be public, but retains the common law theory of the ownership of the beds of the streams.⁴

There are other features in other States which are neither consistent with the common law doctrine, the doctrine of appropriation, nor with each other, nor, in a number of cases, with themselves. All of which goes to show that the law of waters in this Western country is by no means settled, as some of us are led to believe. It is generally conceded, however, that the adoption of a constitutional or legislative provision making all the flowing streams and other waters forever the property of the public, or State, will not be held to have destroyed riparian rights, which had vested prior to the passage of such provision.⁵ As was held in the case of *Crawford Co. v. Hall*,⁶ the legislative enactment to this effect did not have the result of abolishing vested rights of riparian proprietors, but affected only such rights as might have been acquired in the future under the law as theretofore existing.⁷ To hold other-

² For Eminent Domain, see Chap. 55.

³ See terms of dedication, Secs. 378-386.

⁴ See *Johnson v. Johnson*, 14 Idaho 561, 95 Pac. Rep. 499, 24 L. R. A. N. S. 1240.

⁵ *Biglow v. Draper*, 6 N. D. 152, 69 N. W. Rep. 570; *McGhee Irr. D. Co.*

v. Hudson, 85 Tex. Civ. App. 587, 22 S. W. Rep. 398; *Barrett v. Metcalf*, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758.

⁶ 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647.

⁷ See, also, *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A.

wise would be to hold that one could be deprived of his property without due process of law, which would be in direct conflict with the Federal Constitution, that great safeguard of the rights of property, as against legislative encroachment.

910, 108 Am. St. Rep. 697; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Rossmiller v. State*, 114 Wis. 169, 89 N. W. Rep. 839, 58 L. R. A. 93, 91 Am. St. Rep. 910, in which the Court said: "The legislature has no such arbitrary power, under our constitutional system, as that of changing the nature of the ownership of property by a mere fiat. It can no more accomplish that result in that way than it can change the laws of Nature by legislative declaration." *Nielson v. Sponer*, 46 Wash.

14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *Nesalhou v. Walker*, 45 Wash. 621, 88 Pac. Rep. 1032; *Colorado Mill & El. Co. v. Larimer D. & Irr. Co.*, 26 Colo. 47, 56 Pac. Rep. 185; *Armstrong v. Larimer County D. Co.*, 1 Colo. App. 49, 27 Pac. Rep. 235; *Farm Invest. Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918, where the Court held that no property right in waters, already accrued, prior to the adoption of the constitutional provision, is impaired.

PART V.

ACQUISITION AND DISPOSAL OF LANDS AND WATERS BY THE UNITED STATES.

CHAPTER 19.

ACQUISITION OF LANDS AND WATERS BY THE UNITED STATES.

- § 390. Scope of chapter and part.
- § 391. Public domain—Definition.
- § 392. Public lands—Definition.
- § 393. Power of the United States to acquire lands—Treaty-making power.
- § 394. Power of the United States to acquire lands—Treaty-making power—Louisiana Purchase.
- § 395. How the United States acquired its lands—Treaties with England.
- § 396. How the United States acquired its lands—Cession from the original States.
- § 397. Acquisition by treaty—Treaty with France—Louisiana Purchase.
- § 398. Acquisition by treaty—Treaties with Spain—Floridas—Philippines and Porto Rico.
- § 399. Acquisition by treaty—Treaties with Mexico—Guadalupe Hidalgo and the Gadsden Purchase.
- § 400. Power to acquire lands by purchase.
- § 401. Cession of the Hawaiian Islands.
- § 402. Acquisition by treaty—Title taken subject to prior land grants.
- § 403. Acquisition by treaty—Title taken subject to prior land grants—Spanish and Mexican grants.
- § 404. Title taken subject to Indian right of occupancy.
- § 405. Indian right of occupancy—Indian lands thrown open to settlement.
- § 406. Acquisition of waters—Ownership originally in the United States.
- § 407. Public lands of the States.

§ 390. **Scope of chapter and part.**—It is necessary at this point in our work, in order to understand the very foundation of the title to the waters of the arid region, to go back and trace the source of the title to the same, to the time of their acquisition by the Government of the United States; and, as this can be done only in connection with the lands over which they flow, the two will

be treated together in the present chapter. It is proposed in this chapter to discuss the power of the United States to acquire lands, how the various portions of this country were actually acquired, the power of the general Government to dispose of its lands, and how they were and now are being disposed of. We will also discuss the jurisdiction over the lands and waters upon the public domain of the United States, and after their primary disposal to individuals and companies.

In the present chapter we will treat of the subject of the acquisition of the lands by the United States, and in the following chapter we will treat of their disposal.¹

§ 391. **Public domain—Definition.**—The term, “public domain,” in its broadest sense, comprehends all lands and waters in the possession or ownership of the United States, and including lands owned by the several States, as distinguished from lands possessed or owned by private individuals or corporations.¹ The public domain of the United States, of course, includes all lands owned by the United States, whether the same are “public lands,”² or have been set aside for some particular purpose by the Government, such as for military, Indian,³ or forest reservations.⁴ It is even held that the phrase, “public domain,” applies to town lots and town sites which have been segregated by law and the rights of occupancy sold to individual citizens of an Indian nation.⁵

Therefore, strictly speaking, the term, “public domain,” includes all lands the title to which is still in the United States, or in some State, although the right of possession is in individuals or companies. However, we will add that this distinction has not always been followed by legislation or by the Courts. In many Acts both of Congress and of the legislatures of the States the terms, “public domain” and “public lands,” are used as synony-

¹ See Chap. 20, Secs. 408-449.

¹ *Winters v. United States*, 143 Fed. Rep. 740, 77 C. C. A. 666, citing *Kinney on Irrigation*, 1st Ed., Sec. 124.

For public domain of Texas, see *Day Land & Cattle Co. v. State*, 68 Tex. 526, 4 S. W. Rep. 865.

² For Public Lands, see Sec. 392.

³ For Military Reservations, see Sec. 415.

For Indian Reservations, see Secs. 404, 405, 415.

⁴ For Forest Reservations, see Secs. 416-425.

⁵ *Rush v. Thompson*, 2 Ind. Ter. 557, 53 S. W. Rep. 333.

mous, and describe such lands as are subject to sale or other disposal under general laws.⁶

§ 392. **Public lands—Definition.**—The term, “public lands,” only embodies such lands as are subject to sale or other disposition by the United States under general laws.¹ It is a well settled principle that land, once reserved by the Government or appropriated for any special purpose, ceases to be a part of the public lands, and in all grants or proclamations declaring public lands open to settlement the portion already reserved is always excepted, though the exception is not specifically mentioned.²

The rule is also well settled by a long line of decisions, that when public lands have been surveyed and placed on the market, or otherwise opened to private acquisition, a person who complies with all the requisites necessary to entitle him to a patent to a particular lot or tract is to be regarded as the equitable owner thereof, and

⁶ *Barker v. Harvey*, 181 U. S. 481, 45 L. Ed. 963, 21 Sup. Ct. Rep. 690; *Kuechler v. Wright*, 40 Tex. 600.

¹ *Newhall v. Sanger*, 92 U. S. 761, 23 L. Ed. 769; *Barker v. Harvey*, 181 U. S. 481, 45 L. Ed. 963, 21 Sup. Ct. Rep. 690; *Barden v. Northern P. R. Co.*, 145 U. S. 535, 36 L. Ed. 806, 12 Sup. Ct. Rep. 856; *Mann v. Tacoma Land Co.*, 153 U. S. 273, 38 L. Ed. 714, 14 Sup. Ct. Rep. 820; *Wirth v. Branson*, 98 U. S. 118, 25 L. Ed. 86; *Doolan v. Carr*, 125 U. S. 618, 31 L. Ed. 844, 8 Sup. Ct. Rep. 1228; *United States v. McLaughlin*, 127 U. S. 428, 32 L. Ed. 213, 8 Sup. Ct. Rep. 1177; *Northern Pac. R. Co. v. McCormick*, 89 Fed. Rep. 659; *Rierson v. St. Louis & S. F. R. Co.*, 59 Kan. 32, 51 Pac. Rep. 901; *Northern Pac. R. Co. v. Hinchman*, 53 Fed. Rep. 523; *United States v. Elliot*, 7 Utah 389, 26 Pac. Rep. 1117; *Oregon Short L. R. Co. v. Fisher*, 26 Utah 179, 72 Pac. Rep. 931; *State v. Kennard*, 56 Neb. 254, 76 N. W. Rep. 545; *Id.*, 57 Neb.

711, 78 N. W. Rep. 282; *United States v. Garretson*, 42 Fed. Rep. 22; *State v. Cumberland T. & T. Co.*, 52 La. Ann. 1411, 27 So. Rep. 795; *Heydenfeldt v. Daney Gold M. Co.*, 10 Nev. 290, 93 U. S. 634, 23 L. Ed. 995; *Anderson's Law Dict.*, Sub. Public Land; *Bouvier's Law Dict.*, Sub. Public Land.

² *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264; *Winters v. United States*, 143 Fed. Rep. 740, 74 C. C. A. 666, citing *Kinney on Irr.*, 1st Ed., Sec. 124; *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440; *Leavenworth etc. R. Co. v. United States*, 92 U. S. 733, 23 L. Ed. 634; *United States v. Stone*, 69 U. S. 2 Wall. 525, 17 L. Ed. 765; *United States v. Blendaur*, 128 Fed. Rep. 910, 63 C. C. A. 636, rev'g 122 Fed. Rep. 703; *State v. Cumberland T. & T. Co.*, 52 La. Ann. 1411, 27 So. Rep. 795; *Northern Pac. R. Co. v. Hinchman*, 53 Fed. Rep. 523; *Hartmann v. Warren*, 70 Fed. Rep. 946.

the land is no longer public or open to location.³ No lands, wherein the Indian title to occupancy has not been extinguished, are public.⁴ The United States, as proprietor, merely also owns and holds possession of certain lands within the boundaries of the several States and Territories for its own use for military reservations, public buildings, and other purposes. These are in no sense of the term "public lands," but are owned and possessed by virtue of the powers vested by the Constitution for the use of the Government. The public lands of the United States all lie within the boundaries

³ *Wirth v. Branson*, 98 U. S. 118, 25 L. Ed. 86, where the Court held that when public lands have been open to private acquisition, a person who complies with all the requisites to entitle him to a patent in a particular lot is to be regarded as the equitable owner thereof, and the land is no longer open to location; and that the public faith had become pledged to him, and any subsequent grant of the land to another party is void, unless the first location or entry be vacated and set aside; *Lytle v. Arkansas*, 50 U. S. 9 How. 314, 13 L. Ed. 153; *Stark v. Starr*, 73 U. S. 6 Wall. 402, 18 L. Ed. 925, where it was held that the right to a patent once vested is treated by the Government, when dealing with the public lands, as equivalent to a patent issued; and when in fact the patent does issue, it relates back to the inception of the right of the patentee, so far as it may be necessary to cut off intervening claims.

See, also, *Frisbie v. Whitney*, 76 U. S. 9 Wall. 187, 19 L. Ed. 668; *The Yosemite Valley Case*, 82 U. S. 15 Wall. 77, 21 L. Ed. 82; *Union Pac. R. Co. v. McShane*, 89 U. S. 22 Wall. 444, 22 L. Ed. 747; *Shepley v. Cowan*, 91 U. S. 330, 23 L. Ed. 424; *Barden v. Northern Pac. R. Co.*, 145

U. S. 535, 36 L. Ed. 806, 12 Sup. Ct. Rep. 856; *Yakima County v. Tullar*, 3 Wash. T. 393, 17 Pac. Rep. 885.

⁴ *Leavenworth etc. R. Co. v. United States*, 92 U. S. 723, 23 L. Ed. 634, where it was held that the Indians have the unquestionable right to the lands they occupy, until the title to the same be extinguished by a voluntary cession to the Government.

See, also, *United States v. Carpenter*, 111 U. S. 347, 28 L. Ed. 451, 4 Sup. Ct. Rep. 435; *Northern Pac. R. Co. v. Hinchman*, 53 Fed. Rep. 523; *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264; *Barker v. Harvey*, 181 U. S. 481, 45 L. Ed. 963, 21 Sup. Ct. Rep. 690; *Cherokee Nation v. Georgia*, 30 U. S. 5 Pet. 1, 8 L. Ed. 25; *United States v. Cook*, 86 U. S. 19 Wall. 591, 22 L. Ed. 210, where it was held that the right of the Indians to occupancy is as sacred as that of the United States to the fee; *Missouri etc. R. Co. v. Roberts*, 152 U. S. 114, 38 L. Ed. 377, 14 Sup. Ct. Rep. 496; *Winters v. United States*, 143 Fed. Rep. 740, 74 C. C. A. 666; *aff'd*, 207 U. S. 564, 53 L. Ed. 340, 28 Sup. Ct. Rep. 207.

See, also, for Indian Title of Occupancy, Secs. 404, 405.

of the several States and Territories, and, to a certain extent, are subject to the local laws thereof.⁵

§ 393. **Power of the United States to acquire lands—Treaty-making power.**—The right of the Federal Government to acquire lands is sustained by several decisions of the Supreme Court of the United States, as a necessary accompaniment of the power to make treaties. The authority given by the Constitution is, that the President of the United States “shall have power, by and with the advice and consent of the Senate, to make treaties, provided two thirds of the Senators present concur.”¹ From this, it may be readily seen, the power to make treaties is given in general terms by the Constitution, without any description of the objects intended to be embraced by it; and consequently it was designed to include all those questions which, in the ordinary intercourse of nations, are usually made subjects of negotiations and treaty, and which are consistent with the nature of our institutions and with the relation between the States and the United States. And since the acquisition and disposal of territory between nations is one of the most common subjects of ordinary intercourse, it follows that the treaty-making power of the United States has authority to make negotiations with other nations concerning the acquisition of additional territory by purchase or otherwise.²

The United States may acquire territory in the exercise of the treaty-making power by direct cession as the result of war, and in making effectual terms of peace, and for that purpose has the power of other sovereign nations.³ Also, until the year 1871, the

⁵ See Secs. 448, 449.

For the list of the so-called public land States, see Sec. 439.

¹ Constitution of the United States, Art. 2, Sec. 2, Cl. 2.

² Upon the subject of the treaty-making power, see *Holmes v. Jennison*, 39 U. S. 14 Pet. 540, 10 L. Ed. 579; *Holden v. Joy*, 84 U. S. 17 Wall. 211, 21 L. Ed. 523; *Santo's Case*, 2 Brock. U. S. 493, 7 Fed. Cas. No. 4,016; *Pierce v. State*, 13 N. H. 536.

³ *Dorr v. United States*, 195 U. S. 140, 49 L. Ed. 128, 25 Sup. Ct. Rep.

808; *Nelson v. United States*, 30 Fed. Rep. 112; *United States v. Nelson*, 29 Fed. Rep. 202; *American Ins. Co. v. 356 Bales of Cotton*, 26 U. S. 1 Pett. 511, 7 L. Ed. 242, where it was held that the Constitution of the United States confers absolutely on the government of the Union the power of making war and of making treaties, *consequently that Government possesses the power of acquiring territory, either by conquest or by treaty*; 1 Kent Com. 165, 166; *Story Const.*, Sec. 1508, and cases cited; *Annals of*

power to make treaties with the Indian tribes was coextensive with the power to make treaties with foreign nations.⁴ Not only does the Constitution grant to the United States the power to acquire territory under the treaty-making power, but the Constitution also implies the power to acquire territory by cession or conquest, and the power carries with it all proper and incidental power.⁵

§ 394. Power of the United States to acquire lands—Treaty-making power—Louisiana Purchase.—It was by the treaty-making power alone that the United States had the authority to acquire the Louisiana lands. In 1803 the United States Minister to France conducted a treaty with Napoleon the First, whereby the immense Territory of Louisiana was to be ceded to the United States upon the payment of \$15,000,000. The treaty was sent to the Senate by President Jefferson for ratification, and in his accompanying message he advised that it be adopted without debate, which has been taken by some to clearly indicate that he believed the United States Government had no power under the Constitution to acquire land. Such an opportunity was not to be lost and the Senate ratified the treaty in compliance with the message of the President. But later this view of Mr. Jefferson has been clearly shown, under the cases cited, to be erroneous, on the ground that the authority to acquire land is one of the most necessary and essential accompaniments of the treaty-making power.¹

As to the relative extent of the treaty-making power and of the power of Congress, see *Foster v. Neilson*,² in which Mr. Chief Justice Marshall, in delivering the opinion of the Court, said: "A treaty is in its nature a contract between two nations, not a legis-

Congress, 14th Cong., 1st Session, 1815, 1816, pp. 489, 526, 539, 564; Works of Hamilton, 1 Vol., pp. 501-528; Annals of Congress, 4th Cong., 1st Session, 1795, 1796, p. 760; Calhoun's Works, p. 202; *People v. Gerke & Clark*, 5 Cal. 381, 384; *Duer Const. Jur.*, p. 228 *et seq.*

See, also, Alexander Hamilton, in the *Federalist*, No. LXXV; *Ware v. Hylton*, 3 U. S. 3 Dall. 199, 1 L. Ed. 568; *Foster v. Neilson*, 27 U. S. 2 Pet. 253, 7 L. Ed. 415.

⁴ *Cherokee Nation v. Georgia*, 30 U. S. 5 Pet. 1, 8 L. Ed. 25.

See, also, for Indian Right of Occupancy, Secs. 404, 405.

⁵ *Peacock v. Republic of Hawaii*, 12 Hawaii 27.

For the Cession of Hawaii, see Sec. 401.

¹ See, also, cases cited under Secs. 393, 395, 397-399; 2 *Bruce's American Commonwealth*, 62.

² 27 U. S. 2 Pet. 253, 7 L. Ed. 415.

lative Act. It does not *generally* effect, of itself, the object to be accomplished, especially so far as its operation is infraterritorial, but is carried into execution by the sovereign power of respective parties to the instrument. In the United States a different principle is established. Our Constitution declares a treaty to be the law of the land. It is, consequently, to be regarded in Courts of justice as equivalent to an Act of legislature, whenever it operates of itself without the aid of any legislative provision. But when the terms of the stipulation impart a contract—when either of the parties engage to perform a certain, a peculiar Act—the treaty addresses itself to the political, not the judicial, department; and the legislature must execute the contract before it can become a rule for the Court.”³ And it has also been held by the Supreme Court from the very foundation of the Government, that the United States could dispose of the fee simple to the public lands; hence, *a fortiori*, the Government must have a perfect right and title to the same before it could so dispose of them.⁴

§ 395. How the United States acquired its lands—Treaties with England.—In order that one may obtain a clearer understanding of the general source of title of the United States to lands and waters this subject will be very briefly traced.

The English possessions in America were not claimed by right of conquest, but by right of discovery; and all discoveries made by persons acting under the authority of that Government were

³ See, also, upon this subject, *Cherokee Nation v. Georgia*, 30 U. S. 5 Pet. 1, 8 L. Ed. 25; *United States v. Arredondo*, 31 U. S. 6 Pet. 691, 8 L. Ed. 547; *Williams v. Suffolk Ins. Co.*, 38 U. S. 13 Pet. 415, 10 L. Ed. 226; *Latimer v. Poteet*, 39 U. S. 14 Pet. 4, 10 L. Ed. 328; *Pollard's Lessee v. Files*, 43 U. S. 2 How. 591, 11 L. Ed. 391; *Pollard's Lessees v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565; *Luther v. Borden*, 48 U. S. 7 How. 1, 12 L. Ed. 581; *La Roche v. Jones*, 50 U. S. 9 How. 155, 13 L. Ed. 85; *Fellows v. Blacksmith*, 60 U. S. 19 How. 366, 15 L. Ed. 684.

⁴ *Buttz v. Northern Pac. R. Co.*, 119 U. S. 55, 30 L. Ed. 330, 7 Sup. Ct. Rep. 100; *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440, where the Court held that the right of the United States to dispose of the fee of lands occupied by Indian tribes, has always been recognized by that Court from the foundation of the Government.

For Indian Title of Occupancy, see Secs. 404, 405.

For Rights of Indians to Appropriate Water, see Sec. 680.

for the benefit of that nation, and not for the benefit of such persons individually. The same may be said relative to sections of the country discovered by individuals under the authority of other European nations, that the lands discovered were for the benefit of the respective nations. And, according to the principles of international law, as then understood by the civilized powers of Europe, the Indian tribes, in the New World, were regarded as mere temporary occupants of the soil; and the absolute rights of property and dominion were held to belong to the European nation by which any particular portion of the country was first discovered.¹ Whatever forbearance may have been sometimes practiced toward the unfortunate aborigines, either from humanity or policy, yet the territory they occupied was disposed of by the governments of Europe at their pleasure, as if it had been found entirely uninhabited. The Revolution having taken place by which the power of England over the Colonies was shaken off by the Treaty of 1783, the English possessions in that territory, which is now included within the boundaries of the United States, became the property of the several States, from the fact that they were united, at that time, only by the Articles of Confederation, and the Federal Government had not been formed.²

In 1846, by a compromise with England, the Northwest corner of the United States was added to the public domain. Both countries claimed the tract by right of discovery. And, in the negotiations pending the settlement of the dividing line, England demanded that the Columbia River be the division, while the United States demanded "Fifty-four Forty, or fight." When, however, England agreed to an extension of the dividing line, which had been fixed east of the mountains, of the 49th parallel to the Pacific, the Government assented, rather than contend for territory of which it had little knowledge, and the 49th parallel was then agreed upon.³

§ 396. How the United States acquired its lands—Cession from the original States.—One of the methods by which the United States acquired title to its public domain was by cession from the

¹ *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Johnson v. McIntosh*, 21 U. S. 8 Wheat. 543, 5 L. Ed. 681.

² For Treaty of 1783, and construc-

tion thereof, see 7 Fed. Stat. Ann., 1905, p. 565, and cases cited.

³ For Treaty of 1846, and construction thereof, see 7 Fed. Stat. Ann., 1905, p. 587, and cases cited.

original States. Several of the thirteen original States, after the organization of the Government, claimed the title to vast tracts of territory, which extended far into the interior of the country and equaled, in several cases, many times the present size of the State laying claim to the same. Thus Virginia, at one time, laid claim to all territory north and west of the Ohio River. Afterward this land was ceded by New York, Virginia, Massachusetts, and Connecticut to the United States, and the Northwest Territorial Government was organized, from which the States of Ohio, Indiana, Illinois, Michigan, and part of Minnesota were formed.¹ After the adoption of the Constitution many of the original States ceded vast tracts of lands to the United States, which lands became a part of the public domain, to which the general Government held the fee by force of the deeds of cession, the Constitution, and by the statutes enacted for that purpose. By this means the Government became simply the proprietor of these lands and now holds them only as such proprietor where they are located in the States created out of the territory ceded to it, and not by any municipal sovereignty or right of eminent domain which it may be supposed that it possessed.²

§ 397. Acquisition by treaty—Treaty with France—Louisiana Purchase.—Other vast areas of country which went to make up the public domain of the United States were acquired by treaties with and purchases from other countries. In 1803 France ceded

¹ *Langdeau v. Haines*, 88 U. S. 21 Wall. 521, 22 L. Ed. 606; *Morton v. Nebraska*, 88 U. S. 21 Wall. 660, 22 L. Ed. 639; *Wallace v. Parker*, 31 U. S. 6 Pet. 680, 8 L. Ed. 543; *Jones v. Van Zant*, 46 U. S. 5 How. 215, 12 L. Ed. 122; *Strader v. Graham*, 51 U. S. 10 How. 82, 13 L. Ed. 337; *Pennsylvania v. Wheeling Bridge Co.*, 59 U. S. 18 How. 421, 15 L. Ed. 435; *Bates v. Brown*, 72 U. S. 5 Wall. 710, 18 L. Ed. 535; *Messenger v. Mason*, 77 U. S. 10 Wall. 507, 19 L. Ed. 1028; *Clinton v. Englebrecht*, 80 U. S. 13 Wall. 435, 20 L. Ed. 659.

² *Pollard v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565. The United

States now holds the public lands in the new States by force of deeds of cession and the statutes connected with them, and not by any municipal sovereignty, which may be supposed they possess or have received by compact with the new States for that particular purpose.

See, also, *Clark v. Smith*, 38 U. S. 13 Pet. 195, 10 L. Ed. 123; *Fort Leavenworth etc. R. Co. v. Lowe*, 114 U. S. 525, 29 L. Ed. 264, 5 Sup. Ct. Rep. 995; *Bagnell v. Broderick*, 38 U. S. 13 Pet. 436, 10 L. Ed. 235; *United States v. Maxwell Land Grant*, 121 U. S. 325, 30 L. Ed. 949, 7 Sup. Ct. Rep. 1015, *aff'd* 26 Fed. Rep. 118;

to the United States, for the sum of \$15,000,000, all that territory which now forms the State of Louisiana, parts of Alabama and Mississippi, all of Arkansas, Missouri, Iowa, part of Minnesota, all of the Dakotas, Nebraska, Kansas, part of Oklahoma, and parts of Montana, Wyoming, and Colorado.¹ And as Spain also laid claim to part of this territory between the Mississippi and Perdido Rivers wrongfully, as the United States contended, in the year 1810 President Madison issued a proclamation directing the forcible occupation and possession of this territory by the United States, and possession was accordingly taken.

On the 1st of October, 1800, a secret treaty was made at St. Ildefonso between Spain and Bonaparte, then First Consul, by which Spain agreed, on certain conditions to be performed, to retrocede to the French Republic, "the Colony or Province of Louisiana, with the same extent that it now has, in the hands of Spain, and that it had when France possessed it, and such as it ought to be after the treaties subsequently entered into, between Spain and the other States." The ambiguity of the last expression was the cause of the subsequent misunderstanding between Spain and the United States. Did it mean that Spain was to retrocede to France all the territory which the latter had formerly possessed, under the name of Louisiana, or only so much as remained after the separation of West Florida therefrom and the cession thereof to Great Britain? The United States contended for the former construction and Spain for the latter.²

United States v. Repentigny, 72 U. S. 5 Wall. 211, 18 L. Ed. 627; *McMicken v. United States*, 97 U. S. 204, 24 L. Ed. 947; *Schulenberg v. Harriman*, 88 U. S. 21 Wall. 44, 22 L. Ed. 551.

¹ For copy of the Treaty for the cession of Louisiana, see 7 Fed. Stat. Ann. 1905, p. 542.

² For the construction of the United States Supreme Court upon the subject of the Spanish title to these lands, see *United States v. Reynes*, 50 U. S. 9 How. 127, 13 L. Ed. 74; *Davis v. Police Jury*, 50 U. S. 9 How. 280, 13 L. Ed. 138; *United States v. D'Autrive*, 51 U. S. 10 How. 609, 13 L. Ed. 560; *United States v. Lynde's*

Heirs, 78 U. S. 11 Wall. 632, 20 L. Ed. 230; *New Orleans v. DeArmas*, 34 U. S. 9 Pet. 224, 9 L. Ed. 109; *Foster v. Neilson*, 27 U. S. 2 Pet. 253, 7 L. Ed. 415; *United States v. Arredondo*, 31 U. S. 6 Pet. 691, 8 L. Ed. 547; *United States v. Percheman*, 32 U. S. 7 Pet. 51, 8 L. Ed. 604; *United States v. Philadelphia and New Orleans*, 52 U. S. 11 How. 609, 13 L. Ed. 834; *Strother v. Lucas*, 37 U. S. 12 Pet. 410, 9 L. Ed. 1137; *Montault v. United States*, 53 U. S. 12 How. 47, 13 L. Ed. 887; *United States v. Castant*, 53 U. S. 12 How. 437, 13 L. Ed. 1056.

The United States did not acquire

It will be noticed that a large portion of the territory acquired by the United States under the Louisiana Purchase is in what is known as the semi-arid region.³

§ 398. Acquisition by treaty—Treaties with Spain—Floridas—Philippines and Porto Rico.—On February 22, 1819, a treaty with Spain was concluded, which was proclaimed two years later on February 22, 1821, by which Spain, in consideration of the assumption by the United States of claims against that Government of certain citizens of this Government, to an amount not exceeding the sum of \$5,000,000 and the exoneration of Spain from all demands in the future, on account of such claims, ceded to the United States the Floridas and all interests that she claimed in the disputed portion of Louisiana, formerly ceded by France.¹ By another treaty with Spain, concluded at Paris December 10, 1898, and proclaimed April 11, 1899, Spain ceded to the United States the Island of Porto Rico and other islands in the West Indies, the Island of Guam in the Ladrones, and also the archipelago known as the Philippine Islands.²

§ 399. Acquisition by treaty—Treaties with Mexico—Guadalupe Hidalgo and the Gadsden Purchase.—By the treaty concluded February 2, 1848, and proclaimed July 4, 1848, and known as the treaty of Guadalupe Hidalgo, Mexico ceded to the United States the tracts of land embracing the Pacific Highlands, from the Gila River to the forty-second parallel, and from the Texas border and the Rocky Mountains to the Pacific Ocean.¹ The land acquired by

entire possession of the country until 1813, although portions of it were occupied in 1810; *McMicken v. United States*, 97 U. S. 204, 24 L. Ed. 947.

For Treaty of St. Ildefonso between Spain and France, see 7 Fed. Stat. Ann. 1905, p. 546.

³ For the States making up the semi-arid region, see Sec. 239.

¹ For terms of the treaty and construction, see 7 Fed. Stat. Ann. 1905, p. 810, and cases cited.

See, also, *United States v. Texas*, 43—Vol. I—Kin. on Irr.

162 U. S. 1, 40 L. Ed. 867, 16 Sup. Ct. Rep. 725.

² For terms of treaty and construction, see Fed. Stat. Ann., 1905, p. 814, and cases cited.

For irrigation and water laws in Porto Rico, see Part XIV.

For irrigation and water laws in the Philippine Islands, see Part XIV.

¹ For Treaty of Guadalupe Hidalgo and construction thereof, see 7 Fed. Stat. Ann. 1905, p. 694, and cases cited.

this treaty includes the greater portion of the arid region of the United States, to which this work more particularly applies.²

The Treaty of 1848, however, did not include any portion of Texas, which, prior thereto in 1835, had declared its own freedom as "The Republic of Texas," and on December 29, 1845, was admitted into the United States.³ Afterward, by the treaty concluded December 30, 1853, and proclaimed June 30, 1854, Mexico, by what is known as the Gadsden Purchase, sold to the United States the Messilla Valley, south of the Gila River to the present southern boundary of the United States. The consideration paid for this land was the sum of \$10,000,000.⁴

§ 400. Power to acquire lands by purchase.—As discussed in the previous sections of this chapter,¹ the United States has full power to acquire lands by treaty, cession, or by purchase from other countries. It also has the power to purchase lands for the needs and necessities of the Government, through its proper officials, and, when authorized by Congress, from the individual land owners of the country itself.² One of the most important Acts of Congress, providing for the purchase of lands from individual landowners, is that of March 1, 1911,³ which provides for the purchase and acquisition of lands along the watersheds of navigable streams, in order to conserve the navigable capacity of such streams.⁴

§ 401. Cession of the Hawaiian Islands.—The United States has acquired another group of islands which are of the utmost value

² For the civil law introduced in this country by the Spanish and Mexicans, see Secs. 577-583.

See, also, *Irrigation in Mexico*, Sec. 175.

³ See *McKinney v. Saviego*, 59 U. S. 18 How. 235, 15 L. Ed. 365; *Basse v. Brownsville*, 87 U. S. 20 Wall. —, 22 L. Ed. 420.

See, for *Irrigation in Texas*, Part XIV.

⁴ For terms and construction of the Gadsden Treaty, see 7 Fed. Stat. Ann., 1905, p. 704.

See, also, *Ely v. United States*, 171 U. S. 220, 43 L. Ed. 142, 18 Sup. Ct. Rep. 840.

¹ See Secs. 393-399.

² See, for provisions for the acquisition of lands in the National Reclamation Act, Chap. 65.

³ Public, No. 435, 62d Congress, 1st Session; U. S. Comp. Stat. Supp., 1911, p. 652; 36 Stat. L. 961.

For provisions of the Act, see Sec. 422.

⁴ For the protection of navigation, see Secs. 349-356.

and where irrigation is very largely practiced.¹ The Hawaiian Islands were acquired by the United States by cession and by the Joint Resolution of July 7, 1898, accepted by the United States. As far as necessary here, the said Joint Resolution provided, as follows:

Preamble.—"Whereas the Government of the Republic of Hawaii having, in due form, signified its consent, in the manner provided by its constitution, to cede absolutely and without reserve to the United States of America all rights of sovereignty of whatsoever kind in and over the Hawaiian Islands and their dependencies, and also to cede and transfer to the United States the absolute fee and ownership of all public, Government, or Crown lands, public buildings or edifices, ports, harbors, military equipment, and all other public property of every kind and description belonging to the Government of the Hawaiian Islands, together with every kind and appurtenance thereunto appertaining; therefore—

"Section 1. That said cession be accepted, ratified, and confirmed, and that the Hawaiian Islands and their dependencies be, and are hereby, annexed as a part of the territory of the United States and are subject to the sovereign dominion thereof, and that all and singular the property and rights hereinbefore mentioned are vested in the United States of America." ²

Until this resolution was signed by the President, the Republic of Hawaii possessed all the attributes of sovereignty; on the consummation of annexation all the rights of sovereignty were relinquished by the Republic and granted to the United States. During the period taken by the Federal Government to perfect a new system all the functions of the Government remained for exercise by the existing Republic.³ Though the resolution of annexation was passed July 7, 1898, the formal transfer was not made until August 12, 1898, when, at noon of that day, the American flag was raised over the Government house, and the Islands were ceded with appropriate ceremonies to a representative of the United States.⁴

¹ For irrigation and water laws in the Hawaiian Islands, see Chap. 88.

² 3 Fed. Stat. Ann., 1904, p. 183; 30 Stat. L. 750.

³ *Spencer v. McStocker*, 11 Hawaii 58.

See, also, *Peacock v. Republic of Hawaii*, 12 Hawaii 27; *Ex parte Ah Oi*, 13 Hawaii 534; *Ex parte Edwards*, 13 Hawaii 32.

⁴ *Hawaii v. Mankichi*, 190 U. S. 197, 47 L. Ed. 1016, 23 Sup. Ct. Rep. 787.

§ 402. **Acquisition by Treaty—Title taken subject to prior land grants.**—The United States took title to all lands acquired by cession from the various States and countries, subject to two reservations, whether named specifically in the treaty or grant or otherwise: First, all *bona fide* grants to individuals, prior to the treaty or deed of cession, by the State or country then owning the land; and, second, the Indian title of occupancy. In regard to the first class, all the tracts granted, although at that time comparatively sparsely populated, were dotted over with land claims of private individuals. And the rights to private property, whether they consisted of the soil, or in rights of waters, or both, were not impaired by the change of sovereignty and jurisdiction. They were fully secured by the law of nations, and generally by treaty stipulations,¹ and the United States has always honored and protected all valid claims of this nature. The ownership of so much of the soil, or to certain rights of water, as was vested in an individual proprietorship, prior to the grant, did not pass to the Government. It only took the land subject to all equitable rights of private property therein which existed at the time of the transfer. Valid claims to lands or waters, or both, whether grounded upon an inchoate or perfected title were ascertained and adequately protected. This duty, enjoined by a sense of natural justice and by treaty obligations, could only be discharged by prohibiting any intrusion whatever upon the claimed lands or water rights until an opportunity was afforded the parties in interest for a judicial hearing and determination. It was expected that many unfounded and fraudulent claims would be presented for confirmation, and as there was no way of separating them from those which were valid, without an investigation by a competent tribunal, Congress therefore shaped our legislation so that all lands to which a claim was attached should, until it was barred or passed upon, be excluded from any mode of acquiring them.²

¹ As to the treaty stipulations, see treaties referred to with the various countries, Secs. 393-399.

See, also, *United States v. Arredondo*, 31 U. S. 6 Pet. 691, 8 L. Ed. 547; *Menard v. Massey*, 49 U. S. 293, 12 L. Ed. 1085; *Glenn v. United*

States, 54 U. S. 13 How. 250, 14 L. Ed. 133; *Heirs of De Vilemont v. United States*, 54 U. S. 13 How. 261, 14 L. Ed. 138.

² See Acts of Congress, 1811, 2 Stat. at L., pp. 664, 665, Secs. 6, 10.

§ 403. Acquisition by treaty—Title taken subject to prior land grants—Spanish and Mexican grants.—It had been the practice of Spain and Mexico to grant large tracts of land to individuals, sometimes as a reward for meritorious services, but generally, as land was plentiful and the population sparse, it was with a view to invite immigration and promote the settlement of the vacant territory. In the eager rush for gold to California and other portions of the West, many of the Spanish and Mexican grants were overlooked and trespassed upon.¹ It was not until the Act of Congress of March 3, 1851, that our Government undertook to discharge the obligation it had assumed, to adjust the property rights claimed under these Spanish and Mexican grants in the State of California.² This Act created a commission to pass upon them and allowed two years from that date within which to present claims. And, while these claims were pending, or settled adversely to the claimants, the lands covered by them were not "public lands" of the United States, and were excluded from all grants from the United States.³ But, upon the other hand, a failure of any person claiming lands in California by virtue of any right or title derived from a Spanish or Mexican Government to present the same to the commissioners within the two years limited for that purpose, constituted an abandonment of his right,⁴ and the lands included within such alleged claims became a part of the public lands.

The Act of July 22, 1854,⁵ was more general in its character than that of 1851, and a method was provided for the investigation of all Spanish and Mexican grants in all the territory ceded to the United States, and also providing for a confirmation of all *bona fide* grants. Less than one hundred claims were finally confirmed under that Act in nearly thirty-seven years,⁶ and then the

¹ For the rush for gold to California, see Sec. 597.

² For Act of March 3, 1851, see 9 Stat. L. 631.

³ *Newhall v. Sanger*, 92 U. S. 761, 23 L. Ed. 769, where it was held that lands within the boundaries of an alleged Mexican or Spanish grant, which were then *sub judice*, are not public within the meaning of the Acts of Congress, under which the patent

whereon the appellee's title rests, was issued; and to antedate the judicial rejection of a claim so as to render operative a grant which would otherwise be without effect, can not be sanctioned.

⁴ *Barker v. Harvey*, 181 U. S. 481, 45 L. Ed. 963, 21 Sup. Ct. Rep. 690.
⁵ 10 Stat. L. 309.

⁶ Compiler's note, 1 Supp. R. S. 519.

Act of March 3, 1891, repealed and superseded it, and created a Court of Claims for this and other purposes.⁷ Under these various Acts it has been the uniform holding of the Courts that all *bona fide* claims to land would be upheld, provided that the claimants complied with the provisions of the Acts and proved their titles to the grants in question.⁸ But when the United States accepted the cession of the territory from Mexico, it did not assume any obligation to satisfy any pecuniary demands which an individual may have had against the Mexican Government. The United States took these lands with the treaty obligations to respect all rights of property which the respective governments respected, but it was under no obligation to right the wrongs which any government had theretofore committed.⁹ The same principle for the

⁷ For Act March 3, 1891, see 6 Fed. Stat. Ann., 1905, p. 48, and cases cited; also see 1 U. S. Comp. Stat. 1901, p. 764, 26 Stat. L. 854.

⁸ *United States v. Arredondo*, 31 U. S. 6 Pet. 691, 8 L. Ed. 547; *Newhall v. Sanger*, 92 U. S. 761, 23 L. Ed. 769; *Huff v. Doyle*, 93 U. S. 558, 23 L. Ed. 975; *Ryan v. Central Pac. R. Co.*, 99 U. S. 382, 25 L. Ed. 305; *Quinn v. Chapman*, 111 U. S. 446, 28 L. Ed. 476, where it was held that where land claimed as a part of a Mexican grant was, by the final survey of the confirmed grant, ascertained not to be a part of that grant, it then became subject to entry and preemption for the first time; *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994, where it was held that the term "property" in the treaty by which the United States acquired Louisiana, comprehends every species of title, inchoate or complete, legal or equitable, and embraces rights which lie in contract executory as well as executed.

See, also, *Bryan v. Kennett*, 113 U. S. 179, 28 L. Ed. 908, 5 Sup. Ct. Rep. 407; *Soulard v. United States*, 29 U. S. 4 Pet. 511, 7 L. Ed. 938; *Tame-*

ling v. U. S. Freehold etc. Co., 93 U. S. 644, 23 L. Ed. 998; *Delassus v. United States*, 34 U. S. 9 Pet. 117, 9 L. Ed. 71; *United States v. Maxwell Land Grant Co.*, 121 U. S. 325, 30 L. Ed. 949, 7 Sup. Ct. Rep. 1015, *aff'g* 26 Fed. Rep. 118; *Smith v. United States*, 35 U. S. 10 Pet. 326, 9 L. Ed. 442; *Slidell v. Grandjean*, 111 U. S. 412, 28 L. Ed. 321, 4 Sup. Ct. Rep. 475.

⁹ *Cessna v. United States*, 169 U. S. 165, 42 L. Ed. 702, 18 Sup. Ct. Rep. 314; *United States v. Santa Fe*, 165 U. S. 675, 41 L. Ed. 874, 17 Sup. Ct. Rep. 472.

In the case of *Woodruff v. North Bloomfield Gravel Co.*, 8 Sawyer 628, 9 Sawyer 441, 18 Fed. Rep. 753, Mr. Justice Sawyer said: "A custom or usage attempted to be established whereby mining debris might be sent down to the valleys, devastating the lands of private owners, holding titles in fee from the Mexican Government, as old as the title of the United States, without first acquiring the right to do so, by purchase or other lawful means upon compensation paid, would be in direct violation both of the laws and con-

protection of the rights to land applies also to property rights in waters acquired under the French, Spanish, and Mexican laws, before California and other portions of the arid and semi-arid regions were acquired by the United States. They are entitled to and received complete protection under our laws.¹⁰

It therefore follows that a valid Spanish or Mexican grant was never a part of the public lands of the United States, but all the rights acquired in the lands or the waters are entitled to protection in the grantee or his successors in interest.¹¹ Other questions involving Spanish and Mexican grants will be discussed in other portions of this work.¹²

§ 404. Title taken subject to Indian right of occupancy.—The title of the United States to the lands acquired, as set forth in the preceding sections of this work¹ was subject to the Indian right

stitution of the State and of the Constitution of the United States.”

¹⁰ See, for water rights under the French laws, Secs. 574, 576; under the Spanish laws, Sec. 572; under the Mexican laws, Secs. 576-583.

See, also, *Lux v. Haggins*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Hagar v. Reclamation Dist. No. 108*, 111 U. S. 701, 28 L. Ed. 569; 4 Sup. Ct. Rep. 663; *Id.*, 66 Cal. 54, 4 Pac. Rep. 945.

See, also, the case of *United States v. Parrott*, 1 McAllister 271, Fed. Cas. No. 15,998, 7 Morr. Min. Rep. 335, involving the validity of a Mexican grant, and the right to work the mineral lands upon the public domain of the United States.

¹¹ *Hargrave v. Cook*, 108 Cal. 72, 41 Pac. Rep. 18, 30 L. R. A. 390.

See, also, *Lux v. Haggins*, 69 Cal. 255, 10 Pac. Rep. 674; *Pope v. Kinman*, 54 Cal. 3; *Crystal Springs Co. v. Los Angeles*, 177 U. S. 169, 44 L. Ed. 720, 20 Sup. Ct. Rep. 573, affirming *Id.*, 82 Fed. Rep. 114, 76 Fed. Rep. 114, 148; *Los Angeles etc. Co. v. Los*

Angeles, 217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452; *Boquillas etc. Co. v. Curtis*, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493, affirming *Id.*, 11 Ariz. 128, 89 Pac. Rep. 504; *Gutierrez v. Albuquerque etc. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357; *Moore v. Smaw*, 17 Cal. 199, 79 Am. Dec. 123, 12 Morr. Min. Rep. 418; *Los Angeles v. Pomeroy*, 124 Cal. 579, 57 Pac. Rep. 585, 188 U. S. 314, 23 Sup. Ct. Rep. 395, 47 L. Ed. 487, 63 L. R. A. 471; *Vernon Irrigation Co. v. Los Angeles*, 106 Cal. 237, 39 Pac. Rep. 762; *Merced M. Co. v. Biddle Boggs*, 70 U. S. 3 Wall. 304, 18 L. Ed. 245; *Waddingham v. Robledo*, 6 N. M. 347, 28 Pac. Rep. 663.

¹² For riparian right attached to Mexican grants, see Sec. 580.

For the right of appropriation on Mexican grants, see Sec. 583.

For the civil law of waters as modified by the Spanish and Mexicans, see Chap. 30, Secs. 577-583.

¹ See Secs. 393-401.

of occupancy. The title to the lands where this right of occupancy has not been extinguished is now subject to that right. Nearly the whole of this country was originally claimed by various Indian tribes. It is true that but a very small proportion of the land was actually occupied by the Indians, who, in accordance with their nomadic customs, were here one day and there the next. But the whole country was practically parceled off by the various tribes, each claiming a certain tract. Any interference with the lands of one tribe by another led to Indian warfare. With the coming of the white man, with his superior intelligence and knowledge of business transactions, and largely supplemented, we will say, by his methods of warfare, the Indian tribes were driven farther and farther back from our Eastern coast, until they were mostly located on the lands which go to make up the Middle and Western States of this country. As we have seen, this portion of our country was then owned by France, Spain, and Mexico.² With the formation of this Government there was a disposition to accord the Indians more humane treatment. And, therefore from the adoption of our Constitution up to the Act of Congress of March 3, 1871, our dealings with the Indian tribes were by treaties between the United States upon the one part and the particular Indian tribe upon the other. And our Courts held that the power to make treaties with the Indian tribes was coextensive with the power to make treaties with foreign nations.³ Thus, by means of treaties with the Indians, the right of occu-

² See Secs. 394, 397-399.

³ *Cherokee Nation v. Georgia*, 30 U. S. 5 Pet. 1, 8 L. Ed. 25, where it was held that the Cherokees are a State. They have been uniformly treated as a State since the settlement of our country. The numerous treaties made with them by the United States recognize them as a people capable of maintaining the relations of peace and war; of being responsible in their political character for any violations of their engagements or for any aggressions committed on the citizens of the United States by any individual of their community. Laws have been enacted in the spirit of these treaties.

The Acts of our Government plainly recognize the Cherokee Nation as a State, and the courts are bound by these Acts.

See, also, *United States v. Forty-three Gallons of Whiskey*, 93 U. S. 188, 23 L. Ed. 846; *Holden v. Joy*, 84 U. S. 17 Wall. 211, 21 L. Ed. 523; *Graham v. United States*, 30 Ct. Cl. 318; *United States v. Reese*, 5 Dill. 405, 27 Fed. Cas. No. 16,137; *Maiden v. Ingersoll*, 6 Mich. 373; *Choctaw Indians*, 13 Op. Atty. Gen. 354; *Ex Parte Crow Dog*, 109 U. S. 556, 27 L. Ed. 1030, 3 Sup. Ct. Rep. 396; *United States v. Berry*, 4 Fed. Rep. 779.

pancy of the Indians was in many cases extinguished and the United States acquired the absolute title to land, including both the fee and the right of possession.⁴

But by the Act of Congress of March 3, 1871,⁵ Congress provided that, "No Indian nation or tribe, within the territory of the United States, shall be acknowledged or recognized as an independent nation, tribe, or power, with whom the United States may contract by treaty; but no obligation of any treaty lawfully made and ratified with such Indian nation or tribe prior to March 3, 1871, shall be hereby invalidated or impaired." Thus, after an experience of a hundred years of the treaty-making system of government with the Indians, a new policy was determined upon. The Act in question took away the treaty-making power of the Indians and declared them, in effect, not to be independent nations, but wards of the United States, to be governed by Acts of Congress. However, all treaties made and ratified prior to the passage of the Act were not thereby invalidated or impaired.⁶

§ 405. Indian right of occupancy—Indian lands thrown open to settlement.—The legal title to Indian lands is in the United States, and is founded on discovery and grant to the Government, from the various States and foreign countries.¹ Until the Indian right of occupancy is extinguished, the United States has but the naked fee without the right of possession. Hence it is held by the high-

⁴ See cases cited in next Section, No. 405.

⁵ 3 Fed. Stat. Ann., 1905, p. 357; Rev. Stat. U. S., 1878, Sec. 2079, 16 Stat. L., p. 566.

⁶ *United States v. Kagama*, 118 U. S. 375, 30 L. Ed. 228, 6 Sup. Ct. Rep. 1109; *Lone Wolf v. Hitchcock*, 187 U. S. 553, 47 L. Ed. 299, 23 Sup. Ct. Rep. 216; *Cherokee Nation v. Hitchcock*, 187 U. S. 294, 47 L. Ed. 183, 23 Sup. Ct. Rep. 115; *Choctaw Nation v. United States*, 119 U. S. 1, 30 L. Ed. 306, 7 Sup. Ct. Rep. 25, 22 Ct. Cl. 476; *Elk v. Wilkins*, 112 U. S. 94, 28 L. Ed. 643, 5 Sup. Ct. Rep. 41; *Cherokee v. So. Kan. R. Co.*, 135 U. S. 641, 34 L. Ed. 295, 10

Sup. Ct. Rep. 965; *Stephens v. Cherokee Nation*, 174 U. S. 445, 43 L. Ed. 1041, 19 Sup. Ct. Rep. 722; *Ex Parte Crow Dog*, 109 U. S. 556, 27 L. Ed. 1030, 3 Sup. Ct. Rep. 396; *United States v. Osborn*, 2 Fed. Rep. 58; *Truscott v. Hurlbut Land etc. Co.*, 73 Fed. Rep. 60, 19 C. C. A. 374, 44 U. S. App. 248; *Lowe v. United States*, 37 Ct. Cl. 413; *Jaeger v. United States*, 27 Ct. Cl. 278; *Brown v. United States*, 32 Ct. Cl. 432; *Leighton v. United States*, 29 Ct. Cl. 304, *aff'd* 161 U. S. 291, 40 L. Ed. 703, 16 Sup. Ct. Rep. 495, 31 Ct. Cl. 454.

For Irrigation by Indians, see Secs. 271-285.

¹ See Secs. 393-401.

est authorities that a grant from the United States, made before the extinguishment of the Indian right, remains subject to that right, but the title becomes absolute in the grantee whenever the Indian right of occupancy is extinguished. The Indians themselves are deemed incapable of transferring their right to any other than to the United States. Chancellor Kent says on this subject of Indian titles:² "The title is in the United States by the treaty of peace with Great Britain, by subsequent cessions from France and Spain, and by cessions from the individual States; the Indians have only a right of occupancy, and the United States possesses the legal title subject to that occupancy, and with an absolute and exclusive right to extinguish the Indian title of occupancy, either by conquest or purchase. The title of the European nations, which passed to the United States, to this immense territorial empire, was founded on discovery and conquest; and, by the European customary law of nations, prior discovery gave this title to the soil, subject to the possessory rights of the natives, which occupancy was all the right that European conquerors and discoverers, and the United States, as succeeding to their title, would admit to reside in the native Indians. The principle is, that the Indians are to be considered merely as occupants, to be protected while in peace in possession of their lands, but to be deemed incapable of transferring the absolute title to any other than the sovereign of the country."³

As the Indians only hold the right of occupancy to their lands, it has been held by the United States Supreme Court that grants of land to private individuals made by Indian tribes can not be recognized in the Courts of the United States,⁴ unless the pur-

² Kent Com., p. 258.

³ See, also, *Clark v. Smith*, 38 U. S. 13 Pet. 195, 10 L. Ed. 123; *Johnson v. McIntosh*, 21 U. S. 8 Wheat. 543, 5 L. Ed. 681; *Buttz v. Northern Pac. R. Co.*, 119 U. S. 55, 30 L. Ed. 330, 7 Sup. Ct. Rep. 100; *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440; 14 Op. Atty. Gen. 568; *Thompson v. Doaksum*, 68 Cal. 593, 10 Pac. Rep. 199.

See, also, cases cited under previous Section, No. 404.

⁴ *Johnson v. McIntosh*, 21 U. S. 8 Wheat. 543, 5 L. Ed. 681; *United States v. Rillieux*, 55 U. S. 14 How. 189, 14 L. Ed. 381; *United States v. Gusman*, 55 U. S. 14 How. 193, 14 L. Ed. 383; *United States v. Cook*, 86 U. S. 19 Wall. 591, 22 L. Ed. 210, where the Court held that as the Indians had only a right of occupancy in the lands, the presumption is against their authority to cut and sell the timber standing thereon, and that

chases were made at Indian treaties, held by the authority of and ratified by the United States. And in cases of this nature the purchase has been held good without any patent to the purchaser from the United States.⁵ It has also been decided by the same authority that the Indians have the unquestionable right of possession of the lands which they occupy, until the right of occupancy shall have been extinguished by a voluntary cession to the Government,⁶ and that until their title shall have been extinguished, the Indian lands are not "public lands" of the United States and are not open to settlement.⁷

The above principle is especially true where the lands have been reserved for the use of an Indian tribe by treaty. The treaty is notice that the land will be retained by the Government for the use of the Indians, and this purpose can not be defeated by the action of any officers of the General Land Office.⁸ In a recent Utah case it was held that judicial notice of the opening of an Indian reservation in the State and the restoration of the unallotted lands included therein to the public lands would be taken by the Courts.⁹ In Washington it is held that there can be no right of appropriation of the waters of a stream by one illegally occupying land on an Indian reservation prior to the opening of the reservation for settlement.¹⁰

The Indian title to occupancy remains in the Indians until such

every purchaser from them is charged with this notice.

For right of the United States to reserve the waters on the public domain to irrigate Indian lands, see Sec. 411.

⁵ *Mitchell v. United States*, 34 U. S. 9 Pet. 711, 9 L. Ed. 283; *Id.*, 40 U. S. 15 Pet. 52, 10 L. Ed. 658.

⁶ *Leavenworth etc. R. Co. v. United States*, 92 U. S. 733, 23 L. Ed. 634; *Missouri etc. R. Co. v. United States*, 92 U. S. 760, 23 L. Ed. 645; *Cherokee Nation v. Georgia*, 30 U. S. 5 Pet. 1, 8 L. Ed. 25; *Jackson v. Hudson*, 3 Johns. (N. Y.) 375, 3 Am. Dec. 500.

⁷ *Rector v. United States*, 92 U. S. 698, 23 L. Ed. 690; *United States v. Carpenter*, 111 U. S. 347, 28 L. Ed.

451, 4 Sup. Ct. Rep. 435; *United States v. Cook*, 86 U. S. 19 Wall. 591, 22 L. Ed. 210, where the Court held that the Indian right of occupancy was as sacred as the title of the United States to the fee.

See, also, cases cited in the last Section and under Sec. 404.

⁸ *United States v. Carpenter*, 111 U. S. 347, 28 L. Ed. 451, 4 Sup. Ct. Rep. 435.

⁹ *Sowards v. Meagher*, 37 Utah 212, 108 Pac. Rep. 1113.

¹⁰ *Avery v. Johnson*, 59 Wash. 332, 109 Pac. Rep. 1028.

See, also, effect of the dedication by a State of its waters, as against the rights of the United States, Sec. 388.

lands are thrown open to settlement by the Government. Then, and not till then, do Indian lands become a part of the public lands of the United States. This is also true as to military and other Government reservations, with the exception of forest reservations.¹¹

§ 406. **Acquisition of waters—Ownership originally in the United States.**—With the lands acquired as we have described in the previous sections,¹ the United States also acquired the ownership of the waters of the natural streams, lakes, and other bodies, as incidents to the soil. In other words, the United States was the sole riparian proprietor of both the lands bordering on the streams, and the waters flowing therein, with the exception of certain rights to the use of the waters that had vested in the Spanish and Mexican grantees before the territory was acquired by the Government.² As such owner of the water the Government had as good a title to the same as it is possible for any Government or power to acquire title in running waters.³

¹¹ For the right of the Government to reserve lands, see Sec. 413.

For Forest Reservations, see Secs. 416-425.

See, also, *Sowards v. Meagher*, 37 Utah 212, 108 Pac. Rep. 1113; *Avery v. Johnson*, 59 Wash. 332, 109 Pac. Rep. 1028; *Morris v. Bean*, 146 Fed. Rep. 432; *Id.*, 159 Fed. Rep. 651, 86 C. C. A. 519; affirmed in 221 U. S. 485, 55 L. Ed. 821, 31 Sup. Ct. Rep. 703; *Nevada Ditch Co. v. Bennett*, 30 Ore. 59, 45 Pac. Rep. 472, 60 Am. St. Rep. 777; *Story v. Woolverton*, 31 Mont. 346, 78 Pac. Rep. 589; *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207, affirming *Id.*, 148 Fed. Rep. 684, 78 C. C. A. 546; *Id.*, 143 Fed. Rep. 740, 74 C. C. A. 666; *United States v. Conrad Inv. Co.*, 156 Fed. Rep. 130; *Id.*, 161 Fed. Rep. 829, 88 C. C. A. 647; *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662.

¹ See Secs. 393-401.

² *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Sturr v. Beck*, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350, affirming *Id.*, 6 Dak. 71, 50 N. W. Rep. 485; *Benton v. Johnson*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207, affirming *Id.*, 148 Fed. Rep. 684, 78 C. C. A. 546; *Id.*, 143 Fed. Rep. 740, 74 C. C. A. 666.

See, also, discussion relative to the California and Colorado theories as to the origin of right under the Arid Region Doctrine of appropriation, and cases cited, Secs. 627-640.

For power of Government to dispose of its waters, see Sec. 411.

³ For the title to the *corpus* of water, see Secs. 288, 289.

How the Government has disposed of its right to the running waters flowing over the public domain is one of the principal subjects for discussion of this work, and will be discussed under the various appropriate headings.⁴

§ 407. **Public lands of the States.**—The various States of the Union also have the power to acquire, own, and hold lands. To those States known as the “public land States,” great tracts of land have been granted by the Federal Government for various purposes, which subject will be discussed in the following chapter.¹ A State also has the power to purchase or to condemn such lands as are needed by it to carry on its affairs. A State also has the power to dispose of its lands under laws enacted by its legislature, and to apply the funds received from such sale to the purpose for which the lands were originally granted.

In those States which hold to the doctrine of riparian rights a State may become a riparian owner in the waters flowing by or through such lands. In such a case the grantee of the State succeeds to the riparian rights.²

⁴ For the Act of Congress of 1866, and construction thereof, see Secs. 611-620.

For the Act of 1870, see Secs. 615-618.

For the Desert Land Act, see Chap. 66.

For the reservation of waters by the Government, see Secs. 388, 411.

For the disposal of the lands and waters, see Chap. 20, Secs. 408-449.

¹ See Chap. 20, Secs. 408-449.

² *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

See, also, for a State as a riparian owner, Sec. 481.

For Appropriation of Water on State Lands, see Sec. 971, Part XIV.

CHAPTER 20.

DISPOSAL OF LANDS AND WATERS BY THE UNITED STATES.

- § 408. Scope of chapter.
- § 409. Power of the United States to dispose of its lands.
- § 410. Ownership of soil and water distinguished.
- § 411. Power of the United States to dispose of its waters.
- § 412. How the Government disposes of its lands—In general.
- § 413. Authority of the Government to make reservations and withdrawals.
- § 414. Disposal of public lands by way of reservations by the Government—
Effect of reservations.
- § 415. Indian reservations—Disposal of Indian lands.
- § 416. Forest reservations—Act of March 3, 1891.
- § 417. Forest reserves—Act of March 3, 1891—Objects of the Act.
- § 418. Forest reservations—Act of March 3, 1891—What lands may be re-
served—In general.
- § 419. Forest reservations—Character of lands which may be reserved.
- § 420. Forest reservations—How forest reserves are created.
- § 421. Forest reservations—Act of June 4, 1897—The administration of
forest reserves or National forests.
- § 422. Forest reserves—Forest lands purchased by the United States to
protect stream flow under Act of March 1, 1911—The National
Forest Reservation Commission.
- § 423. Forest reserves—Transfer of control to the Department of Agricul-
ture—Rights of way over reserves.
- § 424. Forest reservations—Rules and regulations—Criminal prosecutions.
- § 425. Forest reservations—Rules and regulations forbidding certain acts.
- § 426. The withdrawal and reservation of lands for power sites, irrigation,
classification, and other purposes.
- § 427. Donations for internal improvement—Donations to railroads.
- § 428. Donations for internal improvements—Railway grants.
- § 429. Donations for internal improvements—Miscellaneous grants.
- § 430. Donations for school purposes.
- § 431. Disposal by grants for townsites.
- § 432. How the Government disposes of its lands—Through the General
Land Office—To individuals.
- § 433. Disposal to individuals—Pre-emptions.
- § 434. Disposal to individuals—Homestead entries.
- § 435. Disposal to individuals—Homestead entries—Enlarged homesteads.
- § 436. Disposal to individuals—Timber culture.
- § 437. Disposal to individuals—Bounty lands.
- § 438. Disposal to individuals—Public and private sale.
- § 439. The sale of timber lands under the Timber and Stone Act.
- § 440. Disposal to individuals—Mineral lands.
- § 441. Disposal to individuals—Coal lands.

- § 442. Coal lands—Surface agricultural entries thereon—Reservation of the coal.
- § 443. Coal lands—Right to make surface agricultural entries, selections, and withdrawals—Reservation of coal.
- § 444. Desert Land Act—Carey Act—National Reclamation Act.
- § 445. Rights to land attach, when.
- § 446. Pre-existing water rights not affected by Congressional grants.
- § 447. Grantee takes subject to conditions annexed to grant.
- § 448. Ownership and sovereignty distinguished—Jurisdiction.
- § 449. After title has passed from the United States *lex loci sitæ* governs.

§ 408. **Scope of chapter.**—As the ownership of land is often accompanied with the ownership to certain rights to waters which originally flowed over the land, and the two subjects are usually closely connected, in the present chapter we will show how the United States has disposed of and is now disposing of its lands and waters upon the public domain.¹ In this chapter we will not discuss the subject of rights of way over the public domain, but will reserve that subject for another chapter.²

§ 409. **Power of the United States to dispose of its lands.**—All lands upon the public domain of the United States are the exclusive property of the United States, and may be disposed of to such persons, at such times, in such modes, and by such title, as this Government by its Congress may deem most advantageous and will best promote the public welfare. This principle has been recognized by constitutional authority, by legislation, and by the Courts from the very foundation of the Government. The Government of the United States has a perfect title to its public domain and an absolute and unqualified right of disposal.

Article 4, Section 3, Clause 2, of the Constitution of the United States, reads as follows:

“The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular State.”

And hence it follows that as the complete authority to dispose of

¹ For the acquisition of lands and waters by the United States, see the previous Chapter, 19, Secs. 390-407.

² For rights of way over the public lands, see Chap. 51, Secs. 927-971.

the public domain is in Congress, under the power granted in the Constitution, no appropriation or disposal of lands can be made for any purpose but by the authority of an Act of Congress.¹

Under the Federal Constitution, Congress is vested with the exclusive power to manage and dispose of the public lands. It may dispose of them in such manner, on such terms and conditions, and subject to such restrictions and limitations as in its judgment will best promote the public welfare.² Not only is the power of disposition of the public domain in Congress, but neither State nor Territorial legislation can, in any manner, modify or affect the right which the Government has through Congress to the primary disposal of the public land.³ This right of the General Government has been uniformly reserved by solemn compacts upon the admission of new States into the Union, and has been recognized and scrupulously respected by the Courts of the sovereign States, within which large

¹ *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994; *U. S. v. Fitzgerald*, 40 U. S. 15 Pet. 407, 10 L. Ed. 785; *Gibson v. Chouteau*, 80 U. S. 13 Wall. 92, 20 L. Ed. 534; *Jourdan v. Barrett*, 45 U. S. 4 How. 169, 11 L. Ed. 924; *United States v. Grateot*, 39 U. S. 14 Pet. 526, 10 L. Ed. 573, affirming 1 McLean, 454, Fed. Cas. No. 15,249; *United States v. Maxwell Land Grant Co.*, 121 U. S. 325, 30 L. Ed. 949, 7 Sup. Ct. Rep. 1015, affirming 26 Fed. Rep. 118; *Tameling v. U. S. Freehold etc. Co.*, 93 U. S. 644, 23 L. Ed. 998; *United States v. Tichenor*, 12 Fed. Rep. 415; *Rose v. Buckland*, 17 Ill. 309.

The words "dispose of" vest in Congress the power not only to sell but also to lease the lands of the United States; *Leases on Mineral Lands on Isle Royal*, 4 Op. Atty. Gen. 487.

² Notes on the Constitution of the United States, by Thomas H. Calvert, in 9 Fed. Stat. Ann., 1906, p. 202.

See, also, *Davidson v. Jordan*, 47

Cal. 351; *Farrington v. Wilson*, 29 Wis. 383; *Butte City Water Co. v. Baker*, 196 U. S. 119, 49 L. Ed. 409, 25 Sup. Ct. Rep. 211; *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083, 95 Pac. Rep. 732, 102 Pac. Rep. 728.

³ *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994; *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264; *Gibson v. Chouteau*, 80 U. S. 13 Wall. 92, 20 L. Ed. 534; *Jourdan v. Barrett*, 45 U. S. 4 How. 169, 11 L. Ed. 924; *Seymour v. Sanders*, 3 Dill. 437, Fed. Cas. 12,690; *Russell v. Lowth*, 21 Minn. 167, 18 Am. Rep. 389; *Miller v. Little*, 47 Cal. 348; *Van Brocklin v. Tennessee*, 117 U. S. 151, 29 L. Ed. 845, 6 Sup. Ct. Rep. 670; *Cross v. Harrison*, 57 U. S. 16 How. 164, 14 L. Ed. 889; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14371; *Headley v. Coffman*, 38 Neb. 68, 56 N. W. Rep. 701; *Chapman v. Quinn*, 56 Cal. 256; 11 U. S. 445, 28 L. Ed. 476, 4 Sup. Ct. Rep. 508; *Kissell v. St. Louis Public Schools*, 59 U. S. 18 How. 19, 15 L. Ed. 324.

portions of the public lands have been situated, and within which much of these lands is still remaining.

§ 410. **Ownership of soil and water distinguished.**—It must be borne in mind that it is a well-settled principle in the arid region that ownership in the soil is not necessary to an ownership in the waters running over and adjoining the land. Hence it follows, that a grant of land through which a stream runs or adjoins, may or may not pass any interest in the waters of the stream. In fact before the title to a tract of land passes from the Government to private parties all of the waters that naturally ran over the tract may have been appropriated by other parties and diverted from their natural course and conducted to other tracts, perhaps miles away; and the grantee of the lands in question is compelled to look to other streams, on other lands, for his supply of water. Under the decisions upon this subject the law is settled to mean this: When a grantee of the United States obtains title to a tract of land through or adjoining which a stream of water runs, and the waters of the stream have not hitherto been appropriated, the grantee's title is not subject to any possible appropriation, whereby his riparian rights are injured, which may be subsequently made by another party, unless the State or Territory in which the land is located has, by statutory enactments or court decision, abolished the common law of riparian rights. If the land granted before any appropriation has been made is upon the public domain, within the boundaries of a State, the riparian rights of the grantee must be determined and regulated wholly by the law of the State, over which Congress has no power whatever to legislate. And unless there is a State law upon the subject abolishing or modifying the common law of riparian rights within that State subsequent appropriators of the waters of the stream must take the water subject to all of those rights of the riparian grantee.¹

¹ Lytle Creek W. Co. v. Perdew, 65 Cal. 447, 2 Pac. Rep. 732; *Id.*, 4 Pac. Rep. 426; Lobdell v. Simpson, 2 Nev. 274, 90 Am. Dec. 537; Lobdell v. Hall, 3 Nev. 507; Ophir S. M. Co. v. Carpenter, 4 Nev. 534, 97 Am. Dec. 550, 4 Morr. Min. Rep. 640; Robinson v. Imperial S. M. Co., 5 Nev. 44, 10

Morr. Min. Rep. 370; Covinton v. Becker, 5 Nev. 281; Hobart v. Ford, 6 Nev. 77; Vansickle v. Haines, 7 Nev. 249; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Shoemaker v. Hatch, 13 Nev. 261; Dick v. Caldwell, 14 Nev. 167; Strait v. Brown, 16 Nev. 317, 40 Am. Rep. 497; Crane

But upon the other hand, if the waters of a stream upon any part of the public domain, whether within the boundaries of a State or not, have been appropriated prior to the existence of any rights of a subsequent riparian grantee of the Government, then the riparian rights of the grantee are subject to the rights of the appropriators. And in States which have abolished the common law theories of riparian rights, the person who first actually appropriates, diverts, and uses the waters from any natural stream upon the public domain, for some beneficial purpose, has a perfect title to the same, and that too whether the appropriation is made prior or subsequent to any existing rights of a grantee of the Government. But these questions will be more thoroughly discussed in a future portion of this work.²

§ 411. Power of the United States to dispose of its waters.—As we have seen, the United States originally had a perfect title to all of the waters flowing upon the public domain with the exception of the use of certain waters the right to which had vested before the Government acquired the territory through which these waters flow.¹ Hence it follows that this Government had the right to dispose of these waters as it saw fit. Being the owner of the public domain, the United States originally had the power to dispose of any estate therein, or any incident or part thereof, either together or separately. The water flowing over the public domain is a part thereof, and the National Government had the right to sell or grant the same, or the use thereof, separate from the rest of the estate, under such terms and conditions as might have seemed proper.² And, where there is still water flowing in the natural streams, which

v. Winsor, 2 Utah 248; *Munroe v. Ivie*, 2 Utah 535; *Fabian v. Collins*, 3 Mont. 215; *Barkley v. Tieleke*, 2 Mont. 59, 4 Morr. Min. Rep. 666; *Caruthers v. Pemberton*, 1 Mont. 111.

For rights as between riparian owners and appropriators, see Secs. 810-823.

For riparian rights, see Secs. 450-551.

² For rights of riparian proprietors, see Secs. 450-551.

For rights as between riparian pro-

prietors and appropriators, see Secs. 810-823.

¹ For rights of Spanish and Mexican grantees to the use of waters, see Secs. 578-580.

For United States title to the waters, see Sec. 406.

² See *Howell v. Johnson*, 89 Fed. Rep. 556, where the Court said: "The water of an innavigable stream flowing over the public domain is a part thereof, and the National Government can sell or grant the same, or the use

is still unappropriated under some authority granted by Congress, the General Government may reserve such waters for its own use, or for the use upon Indian or other reservations. As was said by the Supreme Court of the United States in a case decided in 1908: "The power of the Government to reserve the waters and exempt them from appropriation under State Laws is not denied and could not be. That the Government did reserve them we have decided, and for a use which would be necessarily continued through years."³ And, as was said by the Supreme Court of Montana: "Prior to the time of the settlement upon the lands in question, and prior to the appropriation of the waters of Bear Creek by any one, both the land and the water were the property of the Government. When the Government established the reservation, it owned both the land included therein, and all the water running in the various near-by streams to which it had not yielded title. It was therefore unnecessary for the Government to 'appropriate' the water. It owned it already. All it had to do was to take and use it."⁴

In a Federal case arising in Idaho, it was said: "The appropriation of a part of those waters for the uses of the military post secured it in the use of the *portion* so appropriated, but it did not

thereof, separate from the rest of the estate, under such circumstances as may seem to it proper"; *Cruse v. McCauley*, 96 Fed. Rep. 369, where it is said: "As the United States then owns the waters which are incident to its lands, it can dispose of them separate from the lands if it chooses."

See, also, *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371; *Coquille M. & M. Co. v. Johnson*, 52 Ore. 547, 98 Pac. Rep. 132, 132 Am. St. Rep. 716.

See *Arid Region Doctrine of Appropriation*, Secs. 585-594.

³ *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207, affirming *Id.*, 148 Fed. Rep. 684, 78 C. C. A. 546, affirming *Id.*, 143 Fed. Rep. 740.

See, also, *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770, 74 C. C. A. 666; *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662; *Burley v. United States*, 179 Fed. Rep. 1, 102 C. C. A. 429, 172 Fed. Rep. 615; *Conrad Investment Co. v. United States*, 161 Fed. Rep. 829, 88 C. C. A. 647; *Id.*, 156 Fed. Rep. 130; *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *Gutierrez v. Albuquerque etc. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357.

⁴ *Story v. Woolverton*, 31 Mont. 346, 78 Pac. Rep. 589.

take from the others the right to make such appropriation above the reservation as would not interfere with its prior appropriation." ⁵ But we do not think that the rights of the Government are limited to this extent, and that the rights of the Government are better set forth in the dissenting opinion by Mr. Justice Gilbert, to the effect that the rights of the Government must be considered with reference to the possible uses that it thereafter might wish to apply the water. ⁶

The Government is still the owner of the surplus of the waters flowing upon the public domain, or rather the owner of all the waters flowing thereon remaining after deducting the rights to the use of the same which have vested in and accrued in some legal way to individuals and companies. The Government has the same right of disposal of this water which it originally had with one exception. It can not dispose of a riparian right to the use of the water to a purchaser of the land bordering on the stream in those States where riparian rights have been abolished. The question of retaining or abolishing riparian rights has been left entirely with the respective States. Each State may determine for itself whether the common law rule in respect to riparian rights, or whether the Arid Region Doctrine of appropriation of waters for beneficial uses shall control. "Congress can not enforce either rule upon any State." ⁷ But in those States which have retained the common law of riparian rights as to the use of the waters of the natural streams and at the same time permit appropriations of waters for beneficial purposes, a Government grantee takes his riparian right to the use of the water with his grant to the land; provided, of course, that there was unappropriated water in the stream, at the time of the inception of his title to the land. ⁸ The United States also retains

⁵ *Krall v. United States*, 79 Fed. Rep. 241, 24 C. C. A. 543, 48 U. S. App. 351.

⁶ To the same effect see *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207, affirming *Id.*, 148 Fed. Rep. 684, 78 C. C. A. 546, sustaining 143 Fed. Rep. 770, 74 C. C. A. 666.

⁷ *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655;

185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552.

See, also, Secs. 330, 388, 593, and cases cited.

⁸ *Sturr v. Beck*, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350, affirming *Id.*, 6 Dak. 71, 50 N. W. Rep. 486.

For rights as between appropriators and Government grantees, see Secs. 804-809.

See, also, Secs. 810-823.

such a right to the waters in all States and Territories that it may prevent the appropriation and diversion where it is necessary to maintain unimpaired the navigable capacity of the navigable streams of the United States, even to the extent of enjoining the appropriation of the tributaries of such navigable streams and where such appropriations have been made under the local laws of the States wherein they flow.⁹

It therefore follows, as the result of the ownership by the United States of the waters flowing upon the public domain, that any dedication by a State of all the waters flowing within its boundaries to the State or to the public amounts to but little, in the face of any claim which may be made by the Government, *at least* to all the surplus or unused waters within such State.¹⁰ In regard to the rights of the Government to the waters for use by means of the projects constructed under the provisions of the National Reclamation Act,¹¹ it has been held that, when the United States makes an appropriation of water, it does so under the same terms as a private individual, and must follow the law of the State where the appropriation is made.¹² This holding was simply the construction of Section 8 of the Act, which provides that "the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws" of the State where the appropriation was made. We believe that, owing to the fact that the title to the surplus waters flowing over the public domain is in the Government, Congress might have provided otherwise, and have successfully laid claim to the unappropriated waters for these projects by virtue of its ownership of them as above stated. But, having provided by the provisions of the Reclamation Act itself that in these projects the Government must submit itself to the laws of the respective States relative to the appropriation of water, in language which was plain and unambiguous, the Courts can not do otherwise than to sustain such express provision.

⁹ United States v. Rio Grande Dam & Irr. Co., *supra*; Kansas v. Colorado, *supra*.

For right to maintain navigation, see Secs. 349-356.

See, also, Navigation as Against Irrigation, Secs. 354-356.

¹⁰ For the effect of such a dedication as against the rights of the United States, see Sec. 288.

¹¹ See Chap. 65.

¹² Burley v. United States, 179 Fed. Rep. 1, 102 C. C. A. 429, 172 Fed. Rep. 615.

§ 412. How the Government disposes of its lands—In general.—

It is not our purpose in this work to discuss at length all of the details of the methods by which the Government disposes of its lands; and we will do so only so far as to show how the waters of the rivers, streams, lakes, and other natural bodies which are upon these lands, and necessarily a part thereof, pass from the ownership of the United States to other and private ownership. And we think that it will not be out of place, at this point, to briefly discuss the different methods the United States has of disposing of its public domain, bearing in mind that a grant of the soil may or may not also carry with it certain rights in the waters flowing by or through the lands granted.¹

In general we will say that the United States has three methods of disposing of its public domain: First, by special reservations for the use of the Government; second, by donations, the basis of the title to the land in these two cases being a Congressional Act, either special or general; and, third, by regular disposal through the General Land Office, the basis also being some Act of Congress contained in the general land laws, and, upon a compliance with such Act, a patent to the land is given to the grantee.

Bearing in mind the distinction which we have given in previous sections between the terms "public domain" and "public land,"² that the public domain includes all of the lands owned by the United States, but that the term "public land" only includes such lands as are subject to sale or disposal under some general law,³ we will in the following sections endeavor to briefly describe how the United States has disposed of and is disposing of its public domain.

§ 413. Authority of the Government to make reservations and withdrawals.—The United States being the absolute owner and proprietor of all of its public lands and having the full power of disposal,¹ it has also the power to dispose of such lands as the Government by its Congress may from time to time provide. In fact the power of the General Government in this respect is pre-

¹ See previous two Sections, Nos. 410, 411.

² See Secs. 391, 392.

³ *Newhall v. Sanger*, 92 U. S. 761, 23 L. Ed. 769.

¹ For power of disposal of lands, see Sec. 409.

cisely the same as that of a private individual who owns a farm. He may sell all of his land or give it away. He may sell or dispose of a portion of the land, and reserve the remainder. He may sell certain incidents connected therewith, and still retain the title to all of the land itself, as, for example, would be the case where he sells off the timber growing thereon, the stone or gravel found in the soil, or the water rights connected therewith. Again, he may sell the land, and reserve for himself certain incidents. He may retain the title to the fee and may lease the land for agricultural purposes or for pasturage. He may prevent trespasses by others upon his land, for the purpose of cutting the timber thereon, or the running of stock thereon for pasturage.

The same may be said of the power of the Government to dispose of or to reserve for special purposes all or any portion of its public lands, or the incidents connected therewith. Congress may by special Acts create such reservations out of certain portions of its public lands, and that too when and where it sees fit. It may by general or special laws delegate the power to make such reservations to some executive officer of the Government, and the acts of such officers in making them are the acts of the Government, and will stand until revoked by Congress. And Congress may then devote such lands for reservations of another nature, or it may open them up for settlement. Congress may also protect all of its lands from trespass for any purpose, as is the case of the individual. It may also delegate the power to some executive officer of the Government to protect such lands from trespass, and the person who violates any rule or regulation of such officer in this respect, is guilty of trespass and may be prosecuted criminally and convicted, or he may be prosecuted civilly.²

2 *United States v. Grimaud*, 220 U. S. 506, 55 L. Ed. 563, 31 Sup. Ct. Rep. 480, reversing *Id.*, 170 Fed. Rep. 205; *Light v. United States*, 220 U. S. 523, 55 L. Ed. 570, 31 Sup. Ct. Rep. 485; *United States v. Deguirro*, 152 Fed. Rep. 568; *United States v. Domingo*, 152 Fed. Rep. 566; *United States v. Bale*, 156 Fed. Rep. 687; *United States v. Rizzinelli*, 182 Fed. Rep. 675.

That such rules were held to be valid

for civil purposes, see *Dastervignes v. United States*, 122 Fed. Rep. 30, 58 C. C. A. 346, affirming *Id.*, 122 Fed. Rep. 30, 118 Fed. Rep. 199; *United States v. Shannon*, 160 Fed. Rep. 870; affirmed, 88 C. C. A. 52, 51 Fed. Rep. 863.

But before the decisions of the United States Supreme Court, cited *supra*, such regulations were held invalid in *United States v. Blasingame*, 116 Fed. Rep. 654; *United States v.*

For the reason that the Government has not always strictly sought to enforce its rights in the public lands, a mistaken idea has grown up in some portions of the West, and especially in the proximity of these lands by those who desired their use, that a sort of license had been granted by the Government that, until it had sold the lands, they might be used for the unlimited grazing of stock and sheep, and even that the timber thereon might be cut, and that too without any interference or the right to interfere with the same upon the part of the Government.³ In other words, it was contended that simply because the Government did not always interfere with the use of its public lands, those who had theretofore, either illegally or under a mere license, so used the lands, still had a vested right to continue in their use, even after Congress had enacted positive laws, either absolutely prohibiting such use, or restricting it, and permitting the same under certain regulations, and under the supervision of the officers of the Government. It was even contended "that Congress can not constitutionally withdraw large bodies of land from settlement without the consent of the State where it is located; and it is then argued that the Act of 1891,⁴ providing for the establishment of reservations, was void, so that what is nominally a reserve is, in law, to be treated as open and unclosed land, as to which there still exists the implied license that it may be used for grazing purposes."⁵ But this contention can not be maintained for the reason that the public lands of the United States are owned by the Government for the use and benefit of all its citizens alike regardless of locality. Legally, a citizen in New York has as great a right to the use of the public lands of Wyoming as has a citizen of that State, unless under some Act of Congress the citizens of Wyoming are granted some special privileges by reason of their proximity to such lands. As has been said by the Supreme Court

Matthews, 146 Fed. 306; Dent v. United States, 8 Ariz. 138, 71 Pac. Rep. 920, 8 Ariz. 413, 76 Pac. Rep. 455.

See, also, for forest reservations, Secs. 416-425.

For Indian Reservations, see Sec. 415.

For Reservations for Power Purposes, see Sec. 426.

³ Buford v. Houtz, 133 U. S. 320, 33 L. Ed. 618, 10 Sup. Ct. Rep. 305.

⁴ Authorizing the President to create forest reservations, 7 Fed. Stat. Ann., 1905, p. 310; U. S. Comp. Stat., 1901, p. 1537; 26 Stat. L. 1103.

See, also, for forest reserves, Secs. 416-425.

⁵ Light v. United States, 220 U. S. 523, 55 L. Ed. 570, 31 Sup. Ct. Rep. 485.

of the United States: "All the public lands of the Nation are held in trust for the people of the whole country.⁶ It may deal with such lands precisely as a private individual may deal with his farming property. It may sell them or withhold them from sale.⁷ And if it may withhold from sale and settlement, it may also, as an owner, object to its property being used for grazing purposes, for 'the Government is charged with the duty and clothed with the power to protect the public domain from trespass and unlawful appropriation.' " ⁸

It therefore follows that, whatever may be said in favor of the implied license by the tacit consent of the Government, *before* the

⁶ *United States v. Trinidad Coal & Coking Co.*, 137 U. S. 160, 34 L. Ed. 640, 11 Sup. Ct. Rep. 57.

⁷ *Camfield v. United States*, 167 U. S. 518, 42 L. Ed. 260, 17 Sup. Ct. Rep. 864.

⁸ *Light v. United States*, 220 U. S. 523, 55 L. Ed. 570, 31 Sup. Ct. Rep. 485, quoting from *United States v. Beebe*, 127 U. S. 342, 32 L. Ed. 123, 8 Sup. Ct. Rep. 1083.

See, also, *Steele v. United States*, 113 U. S. 128, 28 L. Ed. 952, 5 Sup. Ct. Rep. 396; *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264; *Butte City Water Co. v. Baker*, 196 U. S. 119, 49 L. Ed. 409, 25 Sup. Ct. Rep. 211; *Stearns v. Minnesota*, 179 U. S. 223, 45 L. Ed. 162, 21 Sup. Ct. Rep. 73; *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Id.*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *United States v. Grateot*, 38 U. S. 14 Pet. 526, 10 L. Ed. 573, affirming 1 McLean 454, Fed. Cas. No. 15,249; *Jourdan v. Barrett*, 45 U. S. 4 How. 169, 11 L. Ed. 924; *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994; *Gibson v. Chouteau*, 80 U. S. 13 Wall. 92, 20 L. Ed. 534; *McCarthy v. Mann*, 86 U. S. 19 Wall. 20, 22 L. Ed. 49; *Van Brockline v. Tennessee*, 117 U. S. 151, 29

L. Ed. 845, 6 Sup. Ct. Rep. 670; *United States v. Insley*, 130 U. S. 263, 32 L. Ed. 968, 9 Sup. Ct. Rep. 485; *Redfield v. Parks*, 132 U. S. 239, 33 L. Ed. 327, 10 Sup. Ct. Rep. 83; *Camfield v. United States*, 167 U. S. 518, 42 L. Ed. 260, 17 Sup. Ct. Rep. 864; *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *Mann v. Tacoma Land Co.*, 153 U. S. 273, 38 L. Ed. 714, 14 Sup. Ct. Rep. 820; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Gutierrez v. Albuquerque Land & Irr. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357; *Shannon v. United States*, 160 Fed. Rep. 870, 88 C. C. A. 52; *Fee v. Brown*, 17 Colo. 510, 30 Pac. Rep. 340; affirmed in 162 U. S. 602, 40 L. Ed. 1086, 16 Sup. Ct. Rep. 875; *Union Mill & Min. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *United States v. Cleveland & C. Cattle Co.*, 33 Fed. Rep. 323; *Heckman v. Sutter*, 119 Fed. Rep. 83, 55 C. C. A. 635; *Id.*, 128 Fed. Rep. 393, 63 C. C. A. 135; *United States v. Grimaud*, 220 U. S. 506, 55 L. Ed. 563, 31 Sup. Ct. Rep. 480, rev'g *Id.*, 170 Fed. Rep. 205.

enactment of any Congressional Act prohibiting such use,⁹ *after* such an Act has been passed, the citizens of any particular locality, or of any particular State, or of any particular class, have no more vested rights to the use of these public lands, on account of the actual previous use of them, than have the citizens of any other locality, or State, or class. After the passage of such an Act the merchant in the city of New York has the same legal right to their use as has the stock or sheep raiser in the State of Wyoming, unless, as has been said before, Congress should grant, as it has done relative to grazing on reservations,¹⁰ special preference rights to their use by reason of proximity. Again, Congress has the full power to create reservations for all purposes, and to either grant the right to their use under certain restrictions, as has been done and is now being done in the case of forest reservations or National Forests, as they are called, or it has the absolute power to prohibit any use of any such reservations, as is the case in certain forest reservations where reforestation is taking place.¹¹

§ 414. Disposal of public lands by way of reservations by the Government—Effect of reservations.—Under the Constitution, as we have seen, no disposition of the public lands can be made for any purpose but under the authority of an Act of Congress.¹ The appropriation of land by the Government is nothing more or less than the setting it aside for some particular use, and the disposition of the same for that purpose. So, whenever a tract of land shall have once been legally appropriated to any purpose of the Government, from that moment the land thus appropriated becomes severed from the mass of the public lands; and no subsequent law or proclamation or sale would be construed to embrace it or operate upon it, although no other reservation were made of it, unless, of course, it was clearly the intent of an Act of Congress to abolish the reservation, return the lands to the body of the public lands, and open the same for settlement or other disposition.² The selection

⁹ As was held in *Buford v. Houtz*, 133 U. S. 320, 33 L. Ed. 618, 10 Sup. Ct. Rep. 305.

¹⁰ See for forest reservations, Secs. 416-425.

¹¹ For forest reservations, see Secs. 416-425.

¹ Const., Art. 4, Sec. 3, Cl. 2.
See, also, Sec. 409.

² *United States v. Fitzgerald*, 40 U. S. 15 Pet. 407, 10 L. Ed. 785; *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264, where it was held that: An appropriation of land by the Gov-

of sites for the erection of fortifications, and for military and civil purposes is authorized by the Constitution and the Acts of Congress. Tracts of land for Indian ³ and forest reservations ⁴ are also authorized, and so also is the case of reservations for National Parks and many other objects concerning which it is not our purpose to go into in detail. The power to make the selections is usually committed to the President by Congress, and when made has the same legal validity as if it had been done by express enactment in each particular case. Also as the President speaks and acts through the heads of the several departments in relation to subjects which appertain to their respective duties, a reservation of lands made at the request of a secretary, for purposes in his respective department, must be considered as made by the President of the United States, if within the terms of the Acts of Congress authorizing the selection of the reservation.⁵

After these reservations have been selected, if the lands com-

ernment is nothing more or less than setting it apart for some particular use. In the case before the Court there has been an appropriation of the land not only in fact, but in law, for a military post, for an Indian agency, and for the erection of a lighthouse. And also that by the Act of Congress of 1830, whenever a tract of land shall have once been legally appropriated to any purpose from that moment the land thus appropriated becomes severed from the mass of public lands; and no subsequent law or proclamation or sale would be construed to embrace it, or to operate upon it, although no other reservation were made of it.

By the Act of Congress of 1830, all lands are exempted from pre-emption which are reserved from sale by order of the President of the United States. The President speaks and acts through the heads of the several departments in relation to subjects which appertain to their respective duties. Military posts belong to the

War Department. A reservation of lands made at the request of the Secretary of War for purposes of his department must be construed as made by the President of the United States within the terms of the Act of Congress.

See, also, *United States v. Railroad Bridge*, 6 McLean 517, Fed. Cas. No. 16,114; *City of Mobile v. Eslava*, 41 U. S. 16 Pet. 250, 10 L. Ed. 948; *United States v. Gear*, 44 U. S. 3 How. 120, 11 L. Ed. 523.

³ For Indian reservations, see Sec. 415.

For irrigation by Indians, see Secs. 271-285.

For right to reserve water to irrigate Indian reservations, see Sec. 411.

⁴ For the National Forest reservations, see Secs. 271-283.

⁵ *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264.

See, for power to make National Forest selections in certain States taken from President except by special Act of Congress, Sec. 416.

prising them were part of the "public lands" of the United States, they are no longer considered such, but are considered as lands disposed of, and they can not be restored to the public lands without a special Act of Congress to that effect. And if any patents are issued, purporting to convey any lands, which have been formerly reserved by competent authority for any purpose whatever, it follows that the patents are inoperative to convey any title, and are absolutely void. The Courts have settled by a long line of decisions, that the issuing of a patent for public lands is a ministerial act, which must be performed according to law, and that where it has been issued without authority of law, whether fraudulently or otherwise, it is void.⁶

§ 415. **Indian reservations—Disposal of Indian lands.**—The setting aside of Indian reservations by the Government is a disposition of these lands as far as their being counted "public lands" is concerned.¹ They are still a part of the public domain,² but, strictly speaking, they are not a part of the public lands until they are opened up by the Government for settlement.³ But, as the country is becoming more and more settled up and the demand for land is becoming greater, the modern policy of the Government is, as rapidly as possible, to make individual allotments to the Indians of a portion of the lands included in the reservations, and to open up the rest of the lands for settlement, or, in other words, to restore these lands to the body of the public lands of the United States. The object of this policy is for two purposes: First and foremost, the civilizing effect which this has upon the Indian; and second, the making available more lands for settlement.⁴ We have

⁶ *Stoddard v. Chambers*, 42 U. S. 2 How. 284, 11 L. Ed. 269; *Minter v. Crommelin*, 59 U. S. 18 How. 87, 15 L. Ed. 279, where the Court held that the presumption is that a patent issued is valid and passes the legal title.

See, also, *Brush v. Ware*, 40 U. S. 15 Pet. 93, 10 L. Ed. 672.

For rights of way through Government reservations, see Secs. 954-967.

¹ For the definition of "public lands," see Sec. 392.

² For distinction between "public domain" and "public lands," see Secs. 392, 393.

³ *Sowards v. Meagher*, 37 Utah 212, 108 Pac. Rep. 1113; *Avery v. Johnson*, 59 Wash. 332, 109 Pac. Rep. 1028.

See, also, for the Indian right of occupancy, Secs. 405, 406, and cases cited.

⁴ For irrigation by the Indians, see Chap. 12, Secs. 271-285.

For the effect of irrigation upon the individual, see Sec. 9.

also seen in a previous section that the fee of all Indian lands is in the United States.⁵ The right of the United States to dispose of the fee to lands occupied by the Indians has always been recognized from the very foundation of the Government. This disposition of the fee may be made even before the Indian right of occupancy has been extinguished, but in that case it is always subject to that right, and the legal title becomes absolute in the grantee, only when the Indian right is extinguished. The right of possession when abandoned by the Indians, attaches itself to the fee without further grant. However, it is true, that before the Indian right of occupancy is extinguished, and the land abandoned by the Indians, the grantee only takes the naked fee, and can not disturb the occupancy of the Indians;⁶ that occupancy can only be interfered with or terminated by the United States.⁷

In a recent Utah case it was held that under the Compiled Laws of Utah of 1907, Secs. 1288x *et seq.* prescribing the procedure for the appropriation of public water, that an inceptive right to use such water upon or within an Indian reservation can be initiated or acquired by filing an application with the State Engineer, after the issuance of a proclamation to open the reservation and restore the lands to the public lands of the United States, but before such lands are subject to entry, provided that the application be made in good faith to appropriate the water for a beneficial use and not for speculation or monopoly.⁸ Owing to the fact that under all the authorities, a water right is real property,⁹ and as such real property it was a portion of the Indian reservation; and further under the rule the lands within a reservation are not subject to entry until after they have been formally opened for entry by the Land Department, we are constrained to believe that the ruling of

⁵ See Secs. 404, 405, and cases cited.

⁶ For Indian Right of Occupancy, see Secs. 404, 405.

For right of the Government to reserve waters to irrigate Indian lands, see Secs. 388, 411.

For Irrigation by Indians, see Secs. 271-285.

⁷ *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440; *Johnson v. McIntosh*, 21 U. S. 8 Wheat. 543, 5 L. Ed. 681; *United States v. Cook*, 86 U. S. 19.

Wall. 591, 22 L. Ed. 210; *Jackson v. Hudson*, 3 Johns. (N. Y.) 375, 3 Am. Dec. 500; *Veeder v. Guppy*, 3 Wis. 502; *Portage City Case*, 8 Op. Atty. Gen. 255; *United States v. Nelson*, 29 Fed. Rep. 202.

⁸ *Sowards v. Meagher*, 37 Utah 212, 108 Pac. Rep. 1112.

⁹ That a water right is real property, see Sec. 769, and authorities cited.

the Utah Court was erroneous and that the filing of the application for the appropriation of water upon the reservation with the State Engineer before the lands were opened for entry, was without jurisdiction.¹⁰

§ 416. **Forest reservations—Act of March 3, 1891.**—Section 24 of the Act of March 3, 1891, provides:¹

Sec. 24. *Forest reserves may be set apart by the President.* "That the President of the United States may, from time to time, set apart and reserve, in any State or Territory having public land bearing forests, in any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations, and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof." ²

This was the first general Act of Congress authorizing the setting aside and reserving, in any State or Territory, the public forest lands. The Act provides that land may be set apart and reserved where it was either wholly covered with timber or only partially covered with timber or undergrowth, whether it was of commercial value or not. By this Act no specific reservation was created, but the whole matter rests in the discretion of the President. No provisions are made for the leasing of any portion of the reserves that may be created under the Act, neither are any provisions made for their improvement in any manner, nor for the use in any way of the lands nor of the timber thereon. Hence a great deal of dissatisfaction was caused in the States and Territories where these reservations were made, by the sudden shutting off of all use of these lands and of the timber. The residents had formerly had free access to the grazing on these lands and also to the use of the timber on the same, by the forbearance of the

¹⁰ See, also, Sec. 405, and cases cited.

¹ 7 Fed. Stats. Ann., 1905, p. 310, 2 U. S. Comp. Stat., 1901, p. 1537, 26 Stat. L. 1103.

² But see the Act of March 4, 1907, providing that thereafter no forest reserve shall be created, nor shall additions be made to one theretofore cre-

ated within the limits of the States of Oregon, Washington, Idaho, Montana, Colorado, or Wyoming, except by Act of Congress. Fed. Stat. Ann., Supp. 1907, p. 352; 34 Stat. L. 1270.

See, also, Act of June 25, 1910, 61st Congress, 2d Session, Chap. 421, Sec. 848.

Government and the implied license therefrom.³ To have these vast tracts suddenly withdrawn and set aside as reservations and the use of the lands counted as trespass, required a considerable readjustment of affairs.⁴ It will also be noticed that there were absolutely no provisions in the Act for the administration or management of these forest reservations, and no funds provided for their supervision or improvement. It was not until the Act of June 4, 1897, that provision was made for the administration of forest reserves set apart under the Act of March 3, 1891.⁵

§ 417. Forest reserves—Act of March 3, 1891—Objects of the Act.—The Act shows upon its face that the primary object of its passage was the preservation of the timber on the lands set apart as reservations. It had been called to the attention of Congress on a number of occasions, from the time of the failure of the forestry bill in 1871 to the date of the Act in question, that the timber upon the public domain was being wastefully and recklessly destroyed. Part of this destruction was due to trespass upon these lands, but the greater portion was due to previous Acts of Congress legitimizing this destruction. Owing to the fact that the passage of any Act which tended toward the protection of any timber upon the public domain of the United States was opposed by the parties interested, and that the greater number of the members of Congress were ignorant of the entire subject or supinely indifferent, this Act, although very imperfect, was probably the best that could have been passed at that time. It will be noticed that the provision was Section 24, the last section of an Act relating to entirely different subjects, and was undoubtedly a sort of a compromise measure.¹ However, this Act, as imperfect as it was, started the great work toward the preservation and use of our National Forests.

From a careful perusal of the Act, it can be readily determined

³ *Buford v. Houtz*, 133 U. S. 320, 33 L. Ed. 618, 10 Sup. Ct. Rep. 305.

For the authority to make reservations, see Sec. 413, and cases cited.

⁴ See, also, for trespass on forest reservations, Secs. 424, 425.

⁵ See 7 Fed. Stat. Ann., 1905, pp.

311-315; 2 U. S. Comp. Stat., 1901, p. 1538; 30 Stat. L. 34.

See, for text of Act, Sec. 421.

For rights of way over forest reserves or National Forests, see Secs. 954-963.

¹ See Act as originally passed, 26 Stat. L. 1095.

that Congress had another purpose in view, in addition to that of simply protecting the timber. It will be noticed that under the Act lands may be reserved "wholly or in part covered with timber or undergrowth, whether of commercial value or not." It had been known for many years by scientists that the timber and undergrowth in the mountainous regions along the headwaters of rivers, streams, creeks, and ravines were a means provided by Nature to absorb and check the mountain torrents, and to retain and hold back the moisture for a long time after it had fallen and let it seep gradually down for the use of the country below as it was needed. Prior to the passage of the Act many members of Congress had discovered that the destruction of these forests had already had a disastrous effect upon the streams and rivers of this country. There was no longer the forest protection from the sudden and rapid melting of the winter's snows, and the precipitation was not absorbed as formerly; and some of the direct results of this were the drying up of the streams and rivers at the very time that they were needed the most for irrigation and other industries, by the running off of the precipitation almost immediately after it had fallen, and the resultant inundation of the valleys below, which destroyed the agricultural and other interests of whole communities, and even destroyed entire settlements in the lower portions of the country.² There is no doubt but there was in the minds of the Congressmen who voted for this measure the intent to protect the water supply, as well as the timber.³

"Public forest reservations are established to protect and improve the forests for the purpose of securing a permanent supply of timber for the people and insuring conditions favorable to continuous water flow."⁴

§ 418. Forest reservations—Act of March 3, 1891—What lands may be reserved—In general.—The Act of March 3, 1891,¹ provides that the President may set apart these National Forests in "any

² See Results of the Destruction of the Forests, Secs. 54-57.

³ See, also, Circular of Instructions of May 15, 1891, 12 Land Dec. 499.

⁴ Rules and Regulations, April 4, 1900, 30 Land Dec. 24.

See, also, Forests as Related to Stream Flow, Chap. 2, Secs. 40-62.

See, also, Kinney on Forests, Forestry, and Forest Laws, a work which will be published shortly after this.

¹ For text of Act, see Sec. 416.

part of the public lands wholly or in part covered with timber or undergrowth." The term "public lands," as used in the Act, has a somewhat different meaning than the same term in some of the other Acts of Congress. The term "public lands," in the majority of the Acts of Congress, has been construed many times by the Courts to mean only those lands, belonging to the United States, which "are subject to sale or other disposal under the general laws."² But the sense in which the term is used in the Act in question is more in the sense of "public domain" than in the strict sense of "public lands," as construed by the Courts.³ Hence it follows that any lands owned by the United States, which are at the general disposal of the President by an executive order, may be reserved as a forest reservation, should the character of the lands come within those prescribed by the Act.⁴

² For distinction between "public lands" and "public domain," see Secs. 391, 392.

See *Wilcox v. Jackson*, 38 U. S. 13 Pet. 498, 10 L. Ed. 264; *Leavenworth R. Co. v. United States*, 92 U. S. 733, 23 L. Ed. 634; *Gibson v. Chouteau*, 80 U. S. 13 Wall. 92, 20 L. Ed. 534; *Newhall v. Sanger*, 92 U. S. 761, 23 L. Ed. 769; *Bardon v. Northern Pac. R. Co.*, 145 U. S. 535, 36 L. Ed. 806, 12 Sup. Ct. Rep. 856; *Mann v. Tacoma Land Co.*, 153 U. S. 273, 38 L. Ed. 714, 14 Sup. Ct. Rep. 820; *Barker v. Harvey*, 181 U. S. 481, 45 L. Ed. 963, 21 Sup. Ct. Rep. 690; *Hastings & Dak. R. Co. v. Whitney*, 132 U. S. 357, 33 L. Ed. 363, 10 Sup. Ct. Rep. 112; *The Yosemite Valley Case*, 82 U. S. 15 Wall. 77, 21 L. Ed. 82; *Simmons v. Wagner*, 101 U. S. 260, 25 L. Ed. 910; *Buxton v. Traver*, 130 U. S. 232, 32 L. Ed. 920, 9 Sup. Ct. Rep. 509; 8 Op. Atty. Gen. 72; 10 *Id.*, 57; 11 *Id.*, 492; 17 *Id.*, 180; Op. Atty. Gen. Jan. 5, 1891, 12 Land Dec. 84; *Kaweah Co-operative Colony*, 12 Land Dec. 326.

³ The words "public lands" are not always used in the same sense. Their

true meaning and effect are to be determined by the context in which they are used, and it is the duty of the Court not to give such meaning to the words as would destroy the object and purpose of the law or lead to absurd results. *U. S. v. Blendaur*, 128 Fed. Rep. 910, 63 C. C. A. 636, reversing 122 Fed. Rep. 703.

See, also, *United States v. Bisel*, 8 Mont. 20, 19 Pac. Rep. 251; *Heydenfeldt v. Daney G. & S. M. Co.*, 10 Nev. 290; *Id.*, 93 U. S. 634, 23 L. Ed. 995; *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440; *Frost v. Wenie*, 157 U. S. 46, 39 L. Ed. 614, 15 Sup. Ct. Rep. 532; *Minnesota v. Hitchcock*, 185 U. S. 373, 46 L. Ed. 954, 22 Sup. Ct. Rep. 650; *McFadden v. Mountain View M. & M. Co.*, 97 Fed. Rep. 670, 38 C. C. A. 354; *State v. Kennard*, 56 Neb. 254, 76 N. W. Rep. 545; *Id.*, 57 Neb. 711, 78 N. W. Rep. 282; *Rierson v. St. Louis & S. F. R. Co.*, 59 Kan. 32, 51 Pac. Rep. 901.

⁴ The 15 townships of land in the Bitter Root Valley, Mont., formerly occupied by the Flathead Indians, which by Act of June 5, 1872, 17 Stat. L. 226, provided for the removal

But the executive department of the Government has no power to include, within and as a part of a forest reserve, lands within an abandoned military reservation turned over to the Secretary of the Interior, pursuant to law, for disposal under the Act of Congress, providing for the disposal of lands in abandoned military reservations. The Act of July 5, 1884,⁵ provides that these lands shall be sold at public sale to the highest bidder, for cash, at not less than the appraised value thereof, nor less than \$1.25 per acre. Thus there was a definite method of the disposal of these lands provided for. When Congress has made the special provision for the disposal of any class or character of lands, as in this case provided, it is an implied prohibition against their disposal in any other manner. Nor can it be accomplished indirectly by changing the character of the reservation.⁶ The authority of the executive department is absolutely limited and controlled by the provisions of the Act of disposal.⁷ So when the Act declares that, "Nothing herein contained shall interfere with the allotments to Indians heretofore and hereafter made," any inclusion of such lands is unauthorized and erroneous.⁸ Of course, the President has no power to declare any lands a part of a National Forest, under this or any other Act, upon which there is a lawful claim.⁹ Whenever a tract of land shall have been once legally appropriated to any purpose, from that moment the land thus appropriated becomes severed from the mass of the public lands; and no subsequent law or proclamation or sale will be construed to embrace it, or to operate upon it, although no other reservation is made of it.¹⁰

of the Indians therefrom, were made subject to sale, and to which the homestead laws were extended by the Act of February 11, 1874, 18 Stat. L. 15, became a part of the general public domain, and, as such, were within the provisions of the Act of March 3, 1891, authorizing the President, by proclamation, to set apart forest reservations in "public lands." *United States v. Blendaur*, 128 Fed. Rep. 910, 63 C. C. A. 636, reversing 122 Fed. Rep. 703.

⁵ 6 Fed. Stat. Ann., 1905, pp. 423-

425; 2 U. S. Comp. Stat., 1901, p. 1607, 23 Stat. L. 103.

⁶ See Op. Atty. Gen., 35 Land Dec. 277, 33 Land Dec. 312; R. M. Snyder, 27 Land Dec. 82; Instructions July 20, 1904, 33 Land Dec. 130.

⁷ State of Utah, 30 Land Dec. 301.

⁸ Op. Atty. Gen., 32 Land Dec. 641; *Id.*, 559.

As to Indian allotments, see Secs. 272-285.

⁹ See authorities cited in note above.

¹⁰ See authorities cited in note

above.

By the setting aside of these lands for forest reserves no vested rights of settlers, miners, or others, who had acquired title or who were in the process of acquiring title to certain portions of the land, can be interfered with. And the proclamation of the President creating these reservations contained the following clause: "Excepting from the force and effect of this proclamation all lands which may have been, prior to the date thereof, embraced in any legal entry or covered by any lawful filing duly of record in the proper United States Land Office, or upon which any valid settlement has been made pursuant to law, and the statutory period within which to make entry or filing of record has not expired; and all mining claims duly located and held according to the laws of the United States and the rules and regulations not in conflict therewith; provided, that this exception shall not continue to apply to any particular tract of land unless the entryman, settler, or claimant continues to comply with the law under which the entry, filing, settlement, or location was made." ¹¹

§ 419. Forest reservations—Character of lands which may be reserved.—As to the character of lands which may be reserved under the Forest Acts, the Act of 1891 ¹ provides that they must be public lands bearing forests, or lands wholly or in part covered with timber or undergrowth, whether of commercial value or not. In the instructions of the Secretary of the Interior, who retained jurisdiction of these lands under his general powers of supervision of the lands on the public domain, ² special stress is made not only to reserve lands that are covered with timber, but also lands that were covered with undergrowth; and the special agents were instructed to describe such lands by natural drainage basins, where it was practicable, at the headwaters of rivers and along the banks of streams, creeks, and ravines, as a protection to the water supply. ³ This is undoubtedly within the scope of the Act, as one of the purposes of its enactment was to protect the water supply, and any lands that were of a character that by protecting the

¹¹ Battlement Mesa Forest Reserve,
¹⁶ Land Dec. 190.

¹ For copy of the Act, see Sec. 416.

² See Instructions, Sept. 10, 1892,
¹⁵ Land Dec. 234.

³ See Instructions, May 15, 1891,
¹² Land Dec. 499.

See, also, Purpose of Act, Sec. 417.

timber or undergrowth thereon would tend to protect the water supply are within the scope of the Act and may be reserved. While lands embraced within a National Forest may, under the Act of June 4, 1897,⁴ be excluded, because shown to be more valuable for agricultural than for forest purposes, until formally restored to the public domain, such lands are not subject to further disposition. It was not intended by this Act to exclude from reservations small tracts here and there within the limits of a forest because of the fact that the tracts were not covered with timber.⁵

§ 420. **Forest reservations—How forest reserves are created.**—Under the Act of March 3, 1891, the President of the United States shall, by public proclamation, declare the establishment of such reservations.¹ However, it is not necessary for the President himself to sign a proclamation setting apart public lands as a forest reservation. Where the proclamation is made by the Secretary of the Interior it will be considered as having been done by the Secretary with the President's approval.² The regular routine of the establishment of these reservations has been that special agents of the Department of the Interior are detailed to make a thorough and careful personal examination of the lands in question and to secure all facts possible appertaining to the value of said lands for all uses, purposes, and requirements and report the same to the Secretary with their recommendation.³ Should the knowledge be acquired by the agents that any particular tract or tracts of public timber land are being, or are likely at an early day to be despoiled of the timber, which should be preserved for climatic, economic, or other public reasons, and that the early reservation thereof is necessary, the agents must report the matter at once to the Secretary, stating their reasons for believing that necessity exists for early action. Upon the receipt of such a report, the

⁴ For text of Act, see Sec. 421.

⁵ Jared Woodbridge, 29 Land Dec. 531; E. S. Gosney, 29 Land Dec. 593.

¹ See copy of Act, Sec. 416.

² United States v. Blendaur, 122 Fed. Rep. 703; rev'd 128 Fed. Rep. 910, 63 C. C. A. 636.

See, also, Wilcox v. Jackson, 13

Pet. 38 U. S. 498, 10 L. Ed. 264; Wolsey v. Chapman, 101 U. S. 755, 25 L. Ed. 915; United States v. Macon County Court, 145 U. S. 202, 36 L. Ed. 544, 12 Sup. Ct. Rep. 921.

³ See Instructions to Special Agents, 12 Land Dec. 499.

Secretary, finding that a necessity exists for early action, acts upon the matter by withdrawing the lands, under a temporary order, from all entries, and then time is taken for a more extended examination as to their condition and the necessity for their withdrawal as forest reserves. Should the Secretary finally decide that the lands should be withdrawn as provided for under the Act, he makes his recommendations to the President, describing the lands as accurately as possible, and the President acts thereon.⁴ However, should the Secretary or President decide that the lands should not be withdrawn under the Act, the temporary withdrawal is revoked and they are restored to the body of the public lands.⁵ And again, where a forest reservation has been created by the President, under the Act of March 3, 1891, no Act of Congress is required to restore the land thus reserved to the public domain, but this may be done by the President.⁶

Since the Act of March 4, 1907,⁷ no forest reserves can be created or additions made to one within the States of Oregon, Washington, Idaho, Montana, Colorado, or Wyoming, except by Act

⁴ See Battlement Mesa Forest Reserve, 16 Land Dec. 190; as under the Act June 4, 1897, 7 Fed. Stat. Ann., 1905, p. 311; 2 U. S. Comp. Stat., 1901, p. 1538; 30 Stat. L. 34 (for text of Act, see Sec. 421), the mineral lands within a National Forest are always open to exploration and location, in the temporary withdrawal of the lands, mineral lands remain open. Instructions November 21, 1903, 32 Land Dec. 307.

⁵ Lands embraced within a temporary order of withdrawal issued by the Department of the Interior with a view to creating a forest reservation under the Act of March 3, 1891, are by such order excluded from settlement and entry, pending final action by the President. Battlement Mesa Forest Reserve, 16 Land Dec. 190.

The proclamation of the President creating a National Forest takes effect from the first moment of the day when proclaimed, and selections

made by a State on the same date, within the boundaries prescribed, are therefore subsequent to the proclamation and can have no effect to except the lands from the reservation. State of Utah, 33 Land Dec. 510; *Id.*, 33 Land Dec. 358; *Id.*, 33 Land Dec. 283.

As to the authority of the Secretary of the Interior to make a temporary withdrawal of public lands from entry, see *Wolsey v. Chapman*, 101 U. S. 755, 25 L. Ed. 915; *Riley v. Welles*, 154 U. S. 578, 19 L. Ed. 648, 14 Sup. Ct. Rep. 1166.

⁶ Op. Atty. Gen., 14 Land Dec. 209. See, also, *United States v. Railroad Bridge Co.*, 6 McLean 517; *Grisar v. McDowell*, 73 U. S. 6 Wall. 363, 18 L. Ed. 863; *Bullard v. Des Moines & Ft. Dodge R. Co.*, 122 U. S. 167, 30 L. Ed. 1123, 7 Supp. Ct. Rep. 1149.

⁷ Fed. Stat. Ann. Supp., 1907, p. 352, 34 Stat. L. 1270.

See, also, Sec. 423.

of Congress, and, of course, the routine above described does not now apply to those States.⁸

§ 421. **Forest reservations—Act of June 4, 1897—The administration of forest reserves or National Forests.**—It was not until more than six years after the Act of March 3, 1891, was passed authorizing the creation of forest reservations that any provision was made by Congress for their administration and use. In the meantime a number of these reservations had been created, beginning with that of the Yellowstone Park Timber Land Reserve, proclaimed by President Harrison on March 30, 1891, even down to as late as February 22, 1897.¹ Owing to the fact that large tracts of land in various States and Territories had been withdrawn from the public lands and their use in any way was prohibited by law, it caused great dissatisfaction. This condition was remedied, in a way, by the Act of June 4, 1897.²

This Act is from the Sundry Civil Appropriation Act of June 4, 1897, and, as far as applicable, is as follows:

Sec. 1. *Forest reservations—Revocation, modification, or suspension of executive proclamations.*—Provides that the sum of \$150,000 be immediately available for the survey of the public lands that had then been or might thereafter be designated as forest reserves by Executive proclamation, under Section 24 of the Act of March 3, 1891,³ and to include public lands adjacent thereto. *Provided*, that, to remove any doubt which may exist pertaining to the authority of the President thereunto, the President of the United States is hereby authorized and empowered to revoke, modify, or suspend any and all such Executive orders and proclamations, or any part thereof, from time to time as he shall deem best for the public interests. *Provided*, that the Executive orders and proclamations dated February 22, 1897, setting apart and reserving certain lands in the States of Wyoming, Utah, Montana, Washington, Idaho, and South Dakota as forest reservations be, and they are hereby, suspended and the lands embraced therein

⁸ See, also, Act of June 25, 1910, 61st Congress, 2d Session, Chap. 421, p. 848, Sec. 2.

¹ See proclamations of Feb. 22, 1897, Nos. 19-31, 29 Stat. L. 893-912.

27 Fed. Stat. Ann., 1905, pp. 311-315, 2 U. S. Comp. Stat., 1901, p. 1538, 30 Stat. L. 34.

³ See for text of Act, *ante*, Sec. 417.

restored to the public domain, the same as though said orders and proclamations had not been issued. *Provided further*, that lands embraced in such reservations not otherwise disposed of before March 1, 1898, shall again become subject to the operations of said orders and proclamations as now existing or hereafter modified by the President."

Paragraphs 2 and 3. *Surveys*.—The section then provides for the surveys, in detail, of these lands under the supervision of the Director of the Geological Survey, and under the instructions issued by the Secretary of the Interior.

Par. 4. *Purpose of forest reservations*.—"All public lands not heretofore designated and reserved by the President of the United States under the provisions of the Act approved March 3, 1891, the orders for which shall be and remain in full force and effect, unsuspended and unrevoked, and all public lands that may hereafter be set aside and reserved as public forest reserves under said Act shall be, as far as practicable, controlled and administered in accordance with the following provisions:

Par. 5. "No public forest reservation shall be established, except to improve and protect the forest within the reservation, or for the *purpose of securing favorable conditions of water flows*, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States; but it is not the purpose or intent of these provisions, or of the Act providing for such reservations, to authorize the inclusion therein of lands more valuable for the mineral therein, or for agricultural purposes, than for forest purposes."

Par. 6. *Protection against fires—Rules and regulations*.—"The Secretary of the Interior shall make provisions for the protection against destruction by fire and depredations upon the public forests and forest reservations which may have been set aside, or which may be hereafter set aside, under the said Act of March 3, 1891, and which may be continued; and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction; and any violations of the provisions of this Act or such rules and regulations shall be punished as provided for in the Act of June 4, 1888, amending Section 5388 of the Revised Statutes of the United States."

Par. 7. *Appraisal and sale of timber.*—"For the purpose of preserving the living and growing timber and promoting the younger growth on forest reservations, the Secretary of the Interior, under such rules and regulations as he shall prescribe, may cause to be designated and appraised so much of the *dead, matured, or large growth of trees* found upon such forest reservations as may be compatible with the utilization of the forests thereon, and may sell the same for not less than the appraised value, in such quantities to each purchaser as he may prescribe, to be used in the State or Territory in which such timber reservation may be situated, respectively, but not for export therefrom."

This paragraph, as amended by the Act of June 6, 1900,⁴ and the Act of June 30, 1906,⁵ provides in detail for the advertisement and sale of the timber on all the forest reserves, and concludes with the provisions as to the payments for the timber so sold and that the money received shall be covered into the Treasury, and "such timber, before being sold, shall be marked and designated, and shall be cut and removed under the supervision of some person appointed for that purpose by the Secretary of the Interior, not interested in the purchase or removal of such timber nor in the employment of the purchaser thereof. Such supervisor shall make a report in writing to the Commissioner of the General Land Office and to the Receiver in the Land Office in which such reservation shall be located, of his doings in the premises." ⁶

Par. 8. *Use of timber and stone by settlers, etc.*—"The Secretary of the Interior may permit, under regulations to be prescribed by him, the use of timber and stone found upon such reservations, free of charge, by *bona fide* settlers, miners, residents, and prospectors for minerals, for firewood, fencing, buildings, mining, prospecting, and other domestic purposes, as may be needed by such persons for such purposes; such timber shall be used within the State or Territory, respectively, where such reservations may be located."

Par. 9. *Egress or ingress of settlers within reservations.*—The ninth paragraph provides for a right of way for settlers residing

⁴ 7 Fed. Stat. Ann., 1905, p. 313; 31 Stat. L. 661.

⁵ Fed. Stat. Ann. Supp., 1909, p. 663; 34 Stat. L. 684.

⁶ See 30 Stat. L. 35; 31 Stat. L. 661; 34 Stat. L. 684.

within forest reservations and ends with: "Nor shall anything herein prohibit any person from entering upon any such forest reservation for all proper and lawful purposes, including that of prospecting, locating, and developing the mineral resources thereof. *Provided*, that such persons comply with the rules and regulations covering such forest reservations."

Par. 10. *Rights of settlers—Selection of lieu lands.*—"That in cases in which a tract covered by an unperfected *bona fide* claim or by a patent is included within the limits of a public forest reservation, the settler or owner thereof may, if he desires to do so, relinquish the tract to the Government, and may select in lieu thereof a tract of vacant land open to settlement not exceeding in area the tract covered by his claim or patent; and no charge shall be made in such cases for making the entry of record or issuing the patent to cover the tract selected. *Provided further*, that in cases of unperfected claims the requirements of the laws respecting settlement, residence, improvements, and so forth, are complied with on the new claims, credit being allowed for the time spent on the relinquished claims." ⁷

Par. 11. *Schools and churches on reservations.*—"The settlers residing within the exterior boundaries of such forest reservation, or in the vicinity thereof, may maintain schools and churches within such reservation, and for that purpose may occupy any part of said forest reservation, not exceeding two acres for each schoolhouse and one acre for a church."

Par. 12. *Civil and criminal jurisdiction.*—"The jurisdiction, both civil and criminal, over persons within such reservations shall not be affected or changed by reason of the existence of such reservations, except so far as the punishment of offenses against the United States therein is concerned, the intent and meaning of this provision being that the State wherein any such reservation is situated shall not, by reason of the establishment thereof, lose its jurisdiction, nor the inhabitants thereof their rights and privileges as citizens, or be absolved from their duties as citizens of the State."

Par. 13. *Use of waters.*—"All waters on such reservations may be used for domestic, mining, milling, or irrigation purposes, under

⁷ This section was repealed by the Act of March 3, 1905, 10 Fed. Stat. Ann., 1906, p. 406; 33 Stat. L. 1264.

the laws of the State wherein such forest reservations are situated, or under the laws of the United States and the rules and regulations established thereunder."

Par. 14. *Restoration to the public domain.*—Paragraph 14 provides for the restoration in certain cases to the public lands of lands formerly reserved, and ends with: "And any mineral lands, in any forest reservation, which have been or which may be shown to be such, and subject to entry under the existing mining laws of the United States and the rules and regulations applying thereto, shall continue to be subject to such location and entry, notwithstanding any provisions herein contained."

Par. 15. *Modification or vacation of Executive orders.*—"The President is hereby authorized at any time to modify any Executive order that has been or may hereafter be made establishing any forest reserve, and by such modification may reduce the area or change the boundary lines of such reserve, or may vacate altogether any order creating such reserve."

This Act, as will be noticed, still left the full management and control of these forest reserves with the Secretary of the Interior, while the scientific portion of the work was with the Bureau of Forestry in the Department of Agriculture.⁸ For the reason of this divided jurisdiction, this Act, although a long start in the right direction, was not satisfactory, as far as its working operations were concerned. A great many reservations were created shortly after the Act was passed.⁹ It is under the authority of the Act of March 3, 1891, and the Act of June 4, 1897, with the various supplementary and amendatory Acts passed since the latter Act, that practically all of the National Forests have been created and are now administered. But Congress has created some of these forests, and the Act of March 4, 1907, forbids the creation of National Forests in certain States, without an Act of Congress.¹⁰

⁸ See Sec. 423.

⁹ See proclamations of March 2, May 10, May 27, June 29, August 17, and September 19, 1898; also those of February 10, 1899; Nos. 5, 9, 11, 14, 18-20, 23, 24, 30 Stat. L., pp. 1767, 1771, 1773, 1776, 1780-1785, 1787, 1789.

See Act of February 1, 1905, where

the administration of the National Forests was turned over to the Agricultural Department, 10 Fed. Stat. Ann., 1906, pp. 404, 405; 33 Stat. L., Chap. 288, p. 628. For text of said Act, see Sec. 955.

¹⁰ See Act of March 4, 1907, Fed. Stat. Ann. Supp., 1907, p. 359; 34 Stat. L. 1270. Also, see Sec. 420.

§ 422. Forest Reserves—Forest lands purchased by the United States to protect stream flow under Act of March 1, 1911—The National Forest Reservation Commission.—Owing to the destruction of the forests along the watersheds of this country and the resultant injuries to stream flow, as discussed in a previous chapter of this work,¹ Congress, by a recent Act, has taken an advanced step to purchase the forest lands along the streams, for the purpose of protecting and conserving the navigability of navigable rivers. This Act was passed more with the view of the acquisition of such lands in the Eastern States, where they are mostly in private ownership, but the Act is general in its effect and applies to all portions of the country.

By the Act approved March 1, 1911,² entitled, "An Act to enable any State to co-operate with any other State or States, or with the United States, for the protection of the watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers," it was provided:

That the consent of Congress is thereby given to each of the several States to enter into any agreement or compact, not in conflict with any law of the United States, with any other State or States for the purpose of conserving the forests and water supply of the States entering into such agreement or compact.

Sec. 2. The sum of \$200,000 was appropriated to enable the Secretary of Agriculture to co-operate with any State or group of States, when requested to do so, in the protection from fire of the forested watersheds of navigable streams; and the Secretary of Agriculture is authorized, and on such conditions as he deems wise, to stipulate and agree with any State or group of States to co-operate in the organization of a system of fire protection on any private or State forest lands within such State or States and situated upon the watershed of a navigable river. *Provided*, "that no such stipulation or agreement shall be made with any State which has not provided by law for a system of forest fire protection. *Provided further*, that in no case shall the amount expended in any

¹ For the relation of forests to stream flow, see Chap. 2, Secs. 40-62.

For the protection of the navigable

capacity of streams, see Secs. 349-356.

² Public No. 435, 62d Congress, 1st Session; 36 Stat. L. 961.

State exceed in any fiscal year the amount appropriated by the State for the same purpose during the same fiscal year."

Sec. 3. For the fiscal year ending June 30, 1910, the sum of \$1,000,000 was appropriated, and for each fiscal year thereafter a sum not exceeding \$2,000,000 for use in examination, survey, and acquirement of lands located on the headwaters of navigable streams, or those which are being developed for navigable purposes. *Provided*, that the provisions of this section shall expire by limitation on the 30th of June, 1915.

Sec. 4. A commission, to be known as the "National Forest Reservation Commission" is created, said commission to consist of the Secretaries of War, Interior, and Agriculture, two members of the Senate to be selected by the President of the Senate, and two members of the House of Representatives, to be selected by the Speaker, and authorized to consider and pass upon such lands as may be recommended for purchase, as provided under Section 6 of the Act, and to fix the price or prices at which such lands may be purchased, and no purchase shall be made of any lands until such lands have been duly approved for purchase by said commission.

Sec. 5. The commission must annually report to Congress, not later than the first Monday in December.

Sec. 6. The Secretary of Agriculture is authorized and directed to examine, locate, and recommend for purchase such lands as in his judgment may be necessary for the regulation of the flow of navigable streams, and to report to the National Forest Reservation Commission the results of such examinations. *Provided*, that before any lands are purchased, said lands shall be examined by the Geological Survey and a report made to the Secretary of Agriculture, showing that the control of such lands will promote or protect the navigation of streams on whose watersheds they lie.

Sec. 7. That the Secretary of Agriculture is authorized to purchase, in the name of the United States, such lands as have been approved by the commission at the price or prices fixed by said commission. "*Provided*, that no deed or other instrument of conveyance shall be accepted or approved by the Secretary of Agriculture under this Act until the legislature of the State in which the land lies shall have consented to the acquisition of such land

by the United States for the purpose of preserving the navigability of navigable streams.”

Sec. 8. The title to the lands shall be satisfactory to the Attorney General and shall be vested in the United States.

Sec. 9. Such acquisition may, in any case, be subject to the reservation to the owner from whom title passes of the minerals and of the merchantable timber.

Sec. 10. Lands chiefly valuable for agriculture, which are included in such tracts acquired under the Act, may be sold as homesteads, at their true value, to actual settlers, under such joint rules and regulations as the Secretary of Agriculture and the Secretary of the Interior may prescribe; and in case of such sale the jurisdiction over the lands sold shall, *ipso facto*, revert to the State in which the lands sold lie. “And no right, title, interest, or claim in or to any lands acquired under this Act, *or the waters thereon*, or the products, resources, or use thereof after such lands shall have been so acquired, shall be initiated or perfected, except as in this section provided.”

Sec. 11. “That, subject to the provisions of the last preceding section, the lands acquired under this Act shall be permanently reserved, held, and administered as National Forest lands under the provisions of Section 24 of the Act approved March 3, 1891,³ and Acts supplemental to and amendatory thereof. And the Secretary of Agriculture may from time to time divide the lands acquired under this Act into such specific National Forests, and so designate the same, as he may deem best for administrative purposes.”

Sec. 12. The jurisdiction, both civil and criminal, over persons upon the lands acquired under the Act shall not be affected or changed by their permanent reservation and administration as National Forest lands, except so far as the punishment of offenses against the United States is concerned.

Sec. 13. That five per centum of all moneys received during any fiscal year from each National Forest into which the lands acquired under the Act may from time to time be divided shall be paid at the end of each year, by the Secretary of the Treasury, to the State in which such National Forest is situated, to be

³ For the Act of 1891, see Secs. 416-418.

expended as the State legislature may prescribe, for the benefit of the public schools and public roads.

Sec. 14. That a sum sufficient to pay the necessary expenses of the commission and its members, not to exceed an annual expenditure of \$25,000, is appropriated.

§ 423. Forest reserves—Transfer of control to the Department of Agriculture—Rights of way over reserves.—From 1886 to 1905 there were two departments of the Government that had jurisdiction over different branches of the subjects of forests and forestry, namely, the division afterward the Bureau of Forestry under the Department of Agriculture having charge of the scientific investigations,¹ and the Interior Department having charge of the administration, control, and surveys of the forest reserves, now the National Forests. This division of jurisdiction over the same subject matter caused great dissatisfaction among all parties interested. And in order to have the administration and control, together with the scientific portions of the work, under one head, the Act of February 1, 1905, was passed.² This Act is as follows:

Sec. 1. *Control of forest reserves transferred to Agricultural Department.*—"That the Secretary of the Department of Agriculture shall, from and after the passage of this Act, execute, or cause to be executed, all laws affecting public lands heretofore or hereafter reserved under the provisions of Section 24 of the Act entitled, 'An Act to repeal the timber-culture laws, and for other purposes,' approved March 3, 1891, and Acts supplemental to and amendatory thereof, after such lands have been so reserved, excepting such laws as affect the surveying, prospecting, locating, appropriating, entering, relinquishing, reconveying, certifying, or patenting of any such lands."

And, as the law now stands, and as construed by both the Secretary of the Interior and the Secretary of Agriculture, the latter Secretary has entire jurisdiction of all of the National Forests, except in matters of surveying and the passage of title, which matters are retained by the Secretary of the Interior. By letter of the Secretary of the Interior to the Secretary of Agri-

¹ See Sec. 421.

U. S. Comp. Stat., 1905, pp. 343, 344,

² Act of February 1, 1905, 10 Fed. Stat. Ann., 1906, pp. 404, 405; Supp.

Chap. 288; 33 Stat. L. 628.

culture, dated June 8, 1905, and concurred in by the latter Secretary on June 13, 1905, it is the opinion of the two Secretaries that the Agricultural Department is invested with jurisdiction, under the Act of February 1, 1905, to pass upon all applications under any law of the United States providing for the granting of permission to occupy and use lands in a forest reserve, which occupation or use is temporary in character only, and which, if granted, will in nowise affect or cloud the title of the United States, should the reserve be discontinued; but that the Department of the Interior retains jurisdiction over all applications affecting lands within a forest reserve the granting of which amounts to an easement running with the land, with the further understanding that any permission or license granted by the Department of Agriculture is subject to any later disposal of the land by the Department of the Interior.³

The balance of the Act of February 1, 1905, provides, as follows:

Sec. 2. *Export of pulp wood, etc., from Alaska permitted.*—"That pulp wood or wood pulp manufactured from timber in the District of Alaska may be exported therefrom."

Sec. 3. *Selection of supervisors and rangers.*—"That forest supervisors and rangers shall be selected, when practicable, from qualified citizens of the States or Territories in which the said reserves, respectively, are situated."

Sec. 4. *Water rights granted for mining, etc., purposes.*—"That rights of way for the construction and maintenance of dams, reservoirs, water plants, ditches, flumes, pipes, tunnels, and canals, within and across the forest reserves of the United States, are hereby granted to citizens and corporations of the United States for municipal or mining purposes, and for the purposes of the milling and reduction of ores, during the period of their beneficial use, under such rules and regulations as may be prescribed by the Secretary of the Interior, and subject to the laws of the State or Territory in which said reserves are respectively situated."

Sec. 5. *Use of funds received from sale of products.*—"That all

³ See 33 Land. Dec. 609; also, see Instructions of August 2, 1905, 34 Land. Dec. 64. For rights of way over forest reserves, see Secs. 954-965.

money received from the sale of any products or the use of any land or resources of said forest reserves shall be covered into the Treasury of the United States, and for a period of five years from the passage of this Act shall constitute a special fund, available until expended, as the Secretary of Agriculture may direct, for the protection, administration, improvement, and extension of Federal forest reserves."

§ 424. Forest reservations—Rules and regulations—Criminal prosecutions.—Paragraph 6 of the Act of June 4, 1897, provides that the Secretary of the Interior shall make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use, and to preserve the forests thereon from destruction; and any violation of the provisions of the Act or such rules and regulations shall be punished as provided for by Section 5388, Revised Statutes of the United States, as amended by the Act of June 4, 1888.¹

Section 5388, as amended by the Act of June 4, 1888, referred to in the section, is as follows:

"Every person who unlawfully cuts, or aids, or is employed in unlawfully cutting, or wantonly destroys or procures to be wantonly destroyed, any timber standing upon the land of the United States which, in pursuance of law, may be reserved or purchased for military or other purposes, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under authority of the United States, shall pay a fine of not more than \$500, or be imprisoned not more than twelve months, or both, in the discretion of the Court."²

The Secretary of the Interior under the authority given him under the Act made certain rules and regulations, which remained in force as long as the administration of the National Forests remained with him, but after its transfer by the Act of February 1, 1905, it devolved upon the Secretary of Agriculture

¹ Act of June 4, 1897, 7 Fed. Stat. Ann., 1905, pp. 311-315; 2 U. S. Comp. Stat., 1901, p. 1538; 30 Stat. L. 35.

For text of Act, see Sec. 421.

² Act of June 4, 1888, amending

Sec. 5388 of the Revised Statutes, 7 Fed. Stat. Ann., 1905, pp. 296, 297, 3 U. S. Comp. Stat., p. 3649, 25 Stat. L. 166.

to make the rules and regulations as to the details of the forest management.³ As will be noticed from an examination of Paragraph 6 of the Act of June 4, 1897, which is the law under which both Secretaries acted, the power conferred to make rules and regulations is very broad, and extends to all subjects to regulate *the occupancy and use of the National Forests and to preserve them from destruction*. The dignity of these rules and regulations, where they in no way contravene the statute, is equal to that of the laws themselves, for the statute makes a violation of either the law or the rules and regulations punishable, as is provided for in the Act of Congress of June 4, 1888, amending Section 5388, Revised Statutes of the United States, which imposes a punishment for timber destruction on a reserve by fine or imprisonment, or both.⁴

The constitutionality of the Act authorizing the Secretary to make rules, which in effect are laws, has been tested on nearly every phase of the question, and has been upheld, both as to civil⁵ and criminal prosecutions.⁶ That Congress has full power to

³ See Act of February 1, 1905, 10 Fed. Stat. Ann., 1906, pp. 404, 405; Supp. U. S. Comp. Stat., 1905, pp. 343, 344; 33 Stat. L. 628.

For text of Act, see Sec. 423.

For rules and regulations made by the Secretary of the Interior, see 30 Land Dec. 23, 31 Land Dec. 173, 182, 225, 372.

For rules and regulations made by the Secretary of Agriculture, see The Use Book, 1907, Reg. 1-69.

See, also, the subsequent Use Books issued annually.

⁴ See *United States v. Shannon*, 160 Fed. Rep. 870, 88 C. C. A. 52, 151 Fed. Rep. 863; *Dastervignes v. United States*, 122 Fed. Rep. 30, 58 C. C. A. 346, 118 Fed. Rep. 199; 22 Op. Atty. Gen. 266. But see *Dent v. United States*, 8 Ariz. 138, 71 Pac. Rep. 920, rev'g *Id.*, 8 Ariz. 413, 76 Pac. Rep. 455.

⁵ *United States v. Shannon*, *supra*; *Dastervignes v. United States*, 122

Fed. Rep. 30, 58 C. C. A. 346, 118 Fed. Rep. 199; *Curtin v. Benson*, 158 Fed. Rep. 383.

⁶ *United States v. Grimaud*, 220 U. S. 506, 55 L. Ed. 563, 31 Sup. Ct. Rep. 480, rev'g *Id.*, 170 Fed. Rep. 205; *Light v. United States*, 220 U. S. 523, 55 L. Ed. 570, 31 Sup. Ct. Rep. 485; *United States v. Deguirro*, 152 Fed. 568; *United States v. Domingo*, 152 Fed. Rep. 566; *United States v. Bale*, 156 Fed. Rep. 687; *United States v. Rizzinelli*, 182 Fed. Rep. 675.

But the regulations were held invalid by other Federal Courts before the late decisions of the United States Supreme Court cited above, which decisions fixed the rule of law.

See *United States v. Mathews*, 146 Fed. Rep. 306; *United States v. Blasingame*, 116 Fed. Rep. 654; *Dent v. United States*, 8 Ariz. 138, 71 Pac. Rep. 920, rev'd *Id.*, 8 Ariz. 413, 76 Pac. Rep. 455.

delegate the authority to make rules and regulations concerning the public domain and other questions is now no longer an open question. The earliest decision upon that point is the case of the *United States v. Bailey*,⁷ where it was held that the regulation of the Secretary of the Treasury, under authority of an Act of Congress, permitting proofs of claims against the Government to be verified before any justice of the peace of any of the States, was a valid delegation of authority,* and a person guilty of swearing falsely to such a claim before a justice of the peace of the State of Kentucky was held to be properly convicted of perjury in a Court of the United States.⁸

§ 425. Forest reservations—Rules and regulations forbidding certain acts.—As the Secretary of Agriculture has the authority to make rules and regulations regulating the uses of the National Forests, he also has the authority to make rules prohibiting cer-

For the power of Congress as to the disposal and control of the public lands, see, *Jourdan v. Barrett*, 4 How. 45 U. S. 169, 11 L. Ed. 924; *Gibson v. Chouteau* 80 U. S. 13 Wall. 92, 20 L. Ed. 534.

That the Act of June 4, 1897, is not an unauthorized delegation of legislative authority to the Secretary, see *Dastervignes v. United States*, 122 Fed. Rep. 30, 58 C. C. A. 346, 118 Fed. Rep. 199; *Port Royal M. Co. v. Hagood*, 30 S. C. 519, 9 S. E. 686, 3 L. R. A. 481; *Locke's Appeal*, 72 Pa. 491, 499, 13 Am. Rep. 716; *United States v. Bailey*, 9 Pet. 238, 255, 9 L. Ed. 113; *Waymand v. Southard*, 10 Wheat. 1, 43, 6 L. Ed. 253; *Field v. Clark*, 143 U. S. 649, 36 L. Ed. 294, 12 Sup. Ct. Rep. 495; *Caha v. United States*, 152 U. S. 212, 38 L. Ed. 415, 14 Sup. Ct. Rep. 513; *Bushnell v. Leland*, 164 U. S. 684, 41 L. Ed. 598, 17 Sup. Ct. Rep. 209; *Lake Shore & Mich. Southern R. Co. v. State*, 165 U. S. 365, 41 L. Ed. 747, 17 Sup. Ct. Rep. 357; *United States v. Ormsbee*,

74 Fed. Rep. 207; *United States v. Moline*, 82 Fed. Rep. 592; *Grady v. United States*, 98 Fed. Rep. 239, 39 C. C. A. 42; *Chatfield Co. v. New Haven*, 110 Fed. Rep. 788.

A law which requires a license to herd and pasture sheep is not unconstitutional, and does not constitute an improper classification; *Dastervignes v. United States*, 122 Fed. Rep. 30, 58 C. C. A. 346, 118 Fed. Rep. 199; *Ex parte Mirande*, 73 Cal. 365, 14 Pac. Rep. 888; *Flanigan v. County of Sierra*, 122 Fed. Rep. 24, 58 C. C. A. 340.

7 34 U. S. 9 Peters 238, 9 L. Ed. 113.

8 This decision was approved and followed in the cases of *United States v. Eaton*, 144 U. S. 677, 36 L. Ed. 591, 12 Sup. Ct. Rep. 764; *Caha v. United States*, 152 U. S. 212, 38 L. Ed. 415, 14 Sup. Ct. Rep. 513; *In re Kollock*, 165 U. S. 526, 41 L. Ed. 813, 17 Sup. Ct. Rep. 444; *Van Lear v. Eisele*, 126 Fed. Rep. 823.

tain acts within the forests. In The Use Book of 1907¹ there is a long list of specific acts which are forbidden and for which criminal action will lie. But as the Act of June 4, 1897,² makes any violation of the provisions of that Act, "or such rules and regulations" which shall be made by the Secretary, a criminal offense and punishable as provided for in the Act of June 4, 1888, amending Section 5388 of the Revised Statutes of the United States,³ that is to say, by a fine of not more than \$500, or by imprisonment not more than twelve months, or both, in the discretion of the Court, this list of acts forbidden was omitted from The Use Book of 1908. However, certain acts are specifically forbidden by the regulations of 1908.

Under the authority conferred upon him by Congress, as discussed in the previous sections,⁴ the Secretary of Agriculture has promulgated certain rules and regulations forbidding certain acts within forest reserves or National Forests, among which, as far as applicable to the present work, are to be found the following:

"Regulation 19. The following acts within the National Forests are hereby forbidden:⁵

"(a) Squatting upon land within a forest, or making settlement, except in accordance with the Act of June 11, 1906.⁶

"(b) Building roads, trails, railways, or tramways, and constructing ditches, dams, canals, pipe lines, flumes, tunnels, or reservoirs without a permit, or in violation of the terms of a permit, except as otherwise allowed by law, and except upon patented land, or upon a valid claim consistent with the purpose for which it was initiated.

"(c) Erecting or conducting telephone, telegraph, or power lines, hotels, stores, sawmills, power plants, or other structures, or manufacturing or business enterprises, or carrying on any kind of work, except as allowed by law and National Forest regulations, and except upon patented land or upon a valid claim

¹ Page 119, Reg. 64.

² 7 Fed. Stat. Ann., 1905, p. 312, Par. 6; ³ 2 U. S. Comp. Stat., 1901, p. 1538; ⁴ 30 Stat. L. 34.

For text of Paragraph 6, see Sec. 421.

⁵ 7 Fed. Stat. Ann., 1905, pp. 296,

297; ⁶ 3 U. S. Comp. Stat., 1901, p. 3649; ⁷ 25 Stat. L. 166.

⁸ See Sec. 423.

⁹ The Use Book, 1908, pp. 44, 94.

¹⁰ Fed. Stat. Ann. Supp., 1909, p. 662; ¹¹ 34 Stat. L. 233, as amended May 30, 1908; ¹² 35 Stat. L. 554.

for the actual development of such claim, consistent with the purposes for which it was initiated.

“Protection of Government property.—Reg. 81. The following acts within National Forests are forbidden:

“(a) Willful destruction of or damage to any property belonging to or used by the United States for National Forest purposes.

“(b) The willful tearing down or defacing of any notice of the Forest Service.”

It must be borne in mind, by those who use the National Forest lands or their products, that the violation of a rule or regulation promulgated by the Secretary of Agriculture is as much a criminal offense as the violation of the Acts of Congress themselves, for the reason that the Act of June 4, 1897, *supra*, makes the violation of the rules and regulations of the Secretary a criminal offense and punishable as above stated.⁷

§ 426. The withdrawal and reservation of lands for power sites, irrigation, classification, and other purposes.—One of the most recent Acts of Congress, and one in the line of the recent movement for the conservation of our natural resources, was the general power conferred upon the President of the United States to withdraw lands and reserve the same for water-power sites, irrigation, classification, *and other purposes*, as provided for by the Act of June 25, 1910.¹ The substance of this Act is as follows:

“That the President may, at any time in his discretion, temporarily withdraw from settlement, location, sale, or entry any of the public lands of the United States, including the District of Alaska, and reserve the same for water-power sites, irrigation, classification of lands, or other purposes to be specified in the orders of withdrawals, and such withdrawals or reservations shall remain in force until revoked by him or by Act of Congress.”

It is further provided that all lands withdrawn under the provisions of the Act shall at all times be open for exploration, discovery, occupation, and purchase, under the mining laws of the United States, so far as the same apply to minerals other than

⁷ See, also, Sec. 424.

¹ 61st Congress, 2d Session, Chap.

See, also, for rights of way over forest reservations, Secs. 954-966.

421, p. 847; 36 Stat. L. 847.

coal, oil, gas, and phosphates. *Provided*, that vested rights will not be interfered with of any occupant, so long as such "occupant or claimant shall continue in diligent prosecution of said work." *And provided further*, that this Act shall not be construed as a recognition, abridgment, or enlargement of any asserted rights or claims initiated upon any oil or gas-bearing lands after any withdrawal of such lands made prior to the passage of this Act. *And provided further*, that all valid land entries made prior to the Act are also recognized and the same may be proceeded with to patent. "*And provided further*, that hereafter no forest reserve shall be created, nor shall any additions be made to one heretofore created within the limits of the States of Oregon, Washington, Montana, Colorado, or Wyoming, except by Act of Congress."

The Enabling Act for the admission of New Mexico and Arizona contains somewhat unusual provisions for reservation from all grants of lands to the States of power sites.² These sections provide:

"There is hereby reserved to the United States and exempted from the operation of any and all grants made or confirmed by this Act to said proposed State all land actually or prospectively valuable for the development of water power or power for hydro-electric use or transmission, and which shall be ascertained and designated by the Secretary of the Interior within five years after the proclamation of the President declaring the admission of the State; and no lands so reserved and excepted shall be subject to any disposition whatsoever by said State," and any attempted conveyance of the same shall be null and void.³

Also by the Act of June 25, 1910, relating to Indian allotments,⁴ it was provided that the Secretary of the Interior is authorized, in his discretion, to reserve from location, entry, sale, allotment, or other appropriation any lands within any Indian reservation, valuable for power or reservoir sites, or which may be necessary for use in connection with any irrigation project theretofore or thereafter to be authorized by Congress. *Provided*, that if no irrigation project shall be authorized prior to the opening of any

² 61st Congress, 2d Session, pp. 564, 575, Secs. 10, 28, Act of June 20, 1910.

³ See, also, for the constitution of Arizona, Part XIV.

For the constitution of New Mexico, see Part XIV.

⁴ 61st Congress, 2d Session, Chap. 431, p. 855, Secs. 13, 14.

Indian reservation containing such power or reservoir sites the Secretary may, in his discretion, reserve such sites pending future legislation by Congress for their disposition, and he shall report to Congress all reservations made in conformity with the Act. The Secretary of the Interior is also authorized, after notice and hearing, to cancel trust patents issued to Indian allottees for allotments within any power or reservoir site. *Provided*, that such Indian allottees whose allotments shall be so canceled shall be reimbursed for all improvements thereon. *Provided further*, that any Indian allottee whose allotment, or part thereof, is so canceled shall be allotted land of equal value within the area subject to irrigation by any such project.

§ 427. **Donations for internal improvement—Donations to railroads.**—Another method of the disposal of public lands is by way of donations for internal improvements. These are made by grants by Congress to corporations and States. One of the most common donations of this nature are those to aid in the construction of railroads. There was a time in the early history of the West when land was considered almost worthless and at the same time means of transportation were needed. Congress with a most lavish hand granted vast tracts of land as a bonus to aid in the construction of these roads, and not only granted the lands but also permitted the railroad companies to cut the timber from other lands than those granted to aid in the construction of the roads.¹ Of course these railroad grants expedited the construction of the roads and aided greatly in settling up great territories which were practically uninhabited, except by roving bands of Indians. But in the end the railroad companies were the greatest gainers. And it is to be regretted that these lands were disposed of in the lavish manner in which they were. The roads would have eventually come, without the land grants. And the chances are that today there would have been as many transcontinental roads and branches thereof had no land grants been made. In fact a number of the later roads constructed across the country are not land grant roads, but they seem to be successfully competing with those which had this apparent advantage.

¹ For the land grant to the Union Pacific R. Co., see 6 Fed. Stat. Ann., 1905, p. 720.

§ 428. Donations for internal improvements—Railway grants.

—Every land grant for internal improvements is made under some Act of Congress and the nature and terms of any particular grant must be gathered from the Act itself, as the Act under which it is made is the law upon the subject.¹ There have been two methods exercised in granting lands in aid of railroads. One method is to grant direct to the company, and the other is to make the grant to the State in aid of railroads; and where this is done the State acquires nothing under the Act of Congress more than a mere naked trust, with power to transfer the lands specified in the grant to the company when it has complied with the necessary requirements.² But in either case the building of the road is the consideration for the grant.³ As to the date when the title takes effect under these Congressional grants, the general rule is that it is of the date of the grant. The ordinary railroad land grants have been grants *in praesenti*, and under them the title has been adjudged to pass, not at the completion of the road, but at the date of the grant.⁴

1 See Lester's Land Laws of the United States, 2d Ed.; Kansas Pac. R. Co. v. Dunmeyer, 113 U. S. 629, 28 L. Ed. 1122, 5 Sup. Ct. Rep. 566; Mo., K. & T. R. Co. v. Kansas Pac. R. Co., 97 U. S. 491, 24 L. Ed. 1095; St. Paul etc. R. Co. v. Greenhalgh, 26 Fed. Rep. 563; Hannibal etc. R. Co. v. Smith, 76 U. S. 9 Wall. 95, 19 L. Ed. 599; Winona etc. R. Co. v. Barney, 113 U. S. 618, 28 L. Ed. 872, 5 Sup. Ct. Rep. 606.

2 Rice v. Minn. etc. R. Co., 65 U. S. 1 Black 358, 66 L. Ed. 147; Wolsey v. Chapman, 101 U. S. 755, 25 L. Ed. 915; Van Wyck v. Knevals, 106 U. S. 360, 27 L. Ed. 201, 10 Am. & Eng. R. Cases 664, 1 Sup. Ct. Rep. 336; Schulenberg v. Harriman, 88 U. S. 21 Wall. 44, 22 L. Ed. 551, as to right of railway company to cut timber from lands while the title to the same is in the State; Grinnell v. Chicago etc. R. Co. 103 U. S. 739, 26 L. Ed. 456; Cedar Rapids etc. R. Co. v. Courtright, 88 U. S. 21 Wall. 310, 22 L. Ed. 582; Williams v. Baker,

84 U. S. 17 Wall. 144, 21 L. Ed. 561; Kansas City etc. R. Co. v. Brewster Atty. Gen., 118 U. S. 682, 30 L. Ed. 281, 7 Sup. Ct. Rep. 66; Leavenworth etc. R. Co. v. United States, 92 U. S. 733, 23 L. Ed. 634, where it was held that where a grant covered lands to which the Indians' right of occupancy had not been extinguished, that the Indians had the unquestioned right to the lands until their right of occupancy shall be extinguished by a voluntary cession to the Government.

For Indian right of occupancy, see Secs. 404, 405, 415.

3 Brewster v. Kansas City R. Co., 25 Fed. Rep. 243.

4 United States v. Detroit Timber & L. Co., 200 U. S. 321, 50 L. Ed. 499, 26 Sup. Ct. Rep. 282, affirming 131 Fed. Rep. 668, 67 C. C. A. 13; Leavenworth etc. R. Co. v. United States, 92 U. S. 733, 23 L. Ed. 634; St. Paul M. & M. R. Co. v. Phelps, 137 U. S. 528, 34 L. Ed. 767, 11 Sup. Ct. Rep. 168; St. Paul & P. R. Co. v. Northern P. R. Co., 139 U. S. 1, 35

§ 429. **Donations for internal improvement—Miscellaneous grants.**—Congressional grants of land for internal improvement have also been made for purposes other than that of aiding in the building of railroads. Grants have been made to assist in the improvement of river navigation,¹ for the building of wagon roads,² and the swamp land grants to the several States, to enable those States to construct levees and drains, and reclaim swamp and overflowed lands.³ For these various objects Congress has donated vast tracts of land for the purpose of internal improvements, to assist in building up, settling, and making the country more habitable for man. But in making these donations Congress can not be supposed to exercise its liberality to the prejudice of pre-existing rights, which, though oftentimes imperfect, were still meritorious, and had just claims to legislative protection; and therefore, where any homestead, pre-emption rights, or claims in and to waters of natural streams and lakes or other similar rights have attached prior to the grant, they will be recognized and protected in pursuance of the constant policy of the government to protect those who, in good faith, have settled upon and improved any portion of the public lands.⁴

§ 430. **Donations for school purposes.**—Congress, by many Acts, passed at various times, has granted to all of the public land States and Territories a portion of the public lands within their respective boundaries for the use of the public schools of those States and Territories, and for other educational purposes.¹ In some of the States the sixteenth section in each township only was granted, but

L. Ed. 77, 11 Sup. Ct. Rep. 389; *United States v. Southern Pac. R. Co.*, 146 U. S. 570, 36 L. Ed. 1091, 13 Sup. Ct. Rep. 152.

¹ *Wolcott v. Des Moines etc. R. Co.*, 72 U. S. 5 Wall. 681, 18 L. Ed. 689; *Dubuque etc. R. Co. v. Litchfield*, 64 U. S. 23 How. 66, 16 L. Ed. 500.

² *Penga v. Munz*, 29 Fed. Rep. 830; *California & Oregon L. Co. v. Munz*, 29 Fed. Rep. 837.

³ For swamp and overflowed lands, see 6 Fed. Stat. Ann., 1905, pp. 399-414, and authorities cited; 2 U. S. Comp. Stat., p. 1586; Act of Septem-

ber 28, 1850; 9 Stat. L. 520, as amended by Act of March 12, 1860, 12 Stat. L. 3.

⁴ *Lamb v. Davenport*, 85 U. S. 18 Wall. 307, 21 L. Ed. 759; *Rector v. Gibbon*, 111 U. S. 276, 28 L. Ed. 427, 4 Sup. Ct. Rep. 605; *United States v. Missouri R. Co.*, 37 Fed. Rep. 68.

¹ Upon their admission to the Union Congress granted to each of the States of Illinois, Michigan, Missouri, Ohio, Wisconsin, and others the 16th section of each township for the purpose of aiding the public schools.

in many of those States and Territories formed out of the more arid region of the country both the sixteenth and thirty-sixth sections have been granted,² and in Utah sections 2, 16, 32, and 36 were granted.³ And in all cases it is provided that where the sections prescribed in the various Acts are occupied by actual settlers prior to the survey of such lands, that other lands may be located to an equal amount, in lieu of the sections so occupied.

The legal right and title to these sections remain in the United States until they are officially surveyed; for until surveyed the sections and townships have no existence as such,⁵ and hence all selections of lieu lands made by a State upon unsurveyed lands of the United States are held to be utterly void.⁶ It is also held that where the land is surveyed, the title to the lands granted for the use of the public schools vests in the State at once upon the Act taking effect, as effectually as if a patent had been issued. And, hence, after lands have been selected by the State as indemnity school lands, and certified or listed as such by the proper officers of the United States, there can be no right of entry to such lands by individuals.⁷ No subsequent law of Congress authorizing a sale of public lands can be construed to embrace such school lands.⁸ However, the title to these lands being vested in the respective States, they alone can sell the same and give a perfect title thereto.⁹ Congress has also granted large tracts of lands, to be selected by the

² See 6 Fed. Stat. Ann., 1905, pp. 460-494, and authorities cited; 2 U. S. Comp. Stat., 1901, pp. 1381, 1452; Rev. Stat. of the U. S., 1878, Secs. 1946, 2275, 2276, 2377-2379.

³ 6 Fed. Stat. Ann., 1905, p. 489; Supp. U. S. Comp. Stat., 1905, p. 318; Act of May 3, 1902, 32 Stat. L. 188.

⁴ 6 Fed. Stat. Ann., 1905, p. 462; 2 U. S. Comp. Stat., 1901, p. 1381; Rev. Stat. of U. S., Secs. 2275, 2276.

⁵ *Ferry v. Street*, 4 Utah 521, 7 Pac. Rep. 712, 11 Pac. Rep. 571, App. Dis. 119 U. S. 385, 7 Sup. Ct. Rep. 231, 30 L. Ed. 439; *Gaines v. Nicholson*, 50 U. S. 9 How. 356, 13 L. Ed. 172; *McNee v. Donahue*, 142 U. S. 587, 35 L. Ed. 1122, 12 Sup. Ct. Rep. 211.

⁶ *United States v. Cartner*, 38 Fed. Rep. 1.

⁷ *McCreery v. Haskell*, 119 U. S. 327, 30 L. Ed. 408, 4 Sup. Ct. Rep. 176, where it was held that as between the State and the settler the party which first commences the proceedings required to obtain the title, if they are followed up to the final act for its transfer, is considered to have priority of right. The rule prevails in such cases, first in time, first in right; *Howell v. Slauson*, 83 Cal. 539, 23 Pac. Rep. 692; *Durand v. Martin*, 120 U. S. 366, 30 L. Ed. 675, 7 Sup. Ct. Rep. 587.

⁸ *Beecher v. Wetherby*, 95 U. S. 517, 24 L. Ed. 440.

⁹ *Roberts v. Cooper*, 20 How. 61 U. S. 467, 15 L. Ed. 969.

respective States, for other educational purposes than in aid of the public schools. State universities and agricultural colleges have also been benefited in this manner.

In all of these grants in aid of schools and colleges it is held by the Supreme Court of the United States that by the settled policy of the General Government, mineral lands are excluded.¹⁰

§ 431. **Disposal by grants for townsites.**—There are three methods by means of which public lands are disposed of for townsite purposes:

First.—The President is authorized to reserve from the public lands, whether surveyed or unsurveyed, lands for townsite purposes, on the shores of harbors, at the junctions of rivers, at important portages, or any natural or prospective centers of population. Provisions are made for the survey of such lands selected into lots of suitable size, for the appraisalment of the same at their cash valuation, their sale at public outcry to the highest bidder, and for the disposal of unsold lots at public sale or private entry, at not less than their appraised value. All such sales are to be conducted by the register and receiver of the land office, in that district, in accordance with the instructions of the General Land Office.¹

Second.—In case parties have already founded, or may desire to found, a city or town on the public lands they may cause to be filed with the recorder of the county in which the same is situated a plat for not exceeding 640 acres, describing its exterior boundaries according to the lines of the public surveys, if the lands have been surveyed; also giving the name of such city or town, and exhibiting its streets, squares, etc., with measurements, and area of each municipal subdivision, the lots in which shall not exceed 4200 square feet, with a statement of the extent and general character of the

¹⁰ *Ivanhoe M. Co. v. Keystone Con. M. Co.*, 102 U. S. 167, 26 L. Ed. 126; *Sherman v. Buick*, 93 U. S. 209, 23 L. Ed. 849.

¹ 16 Fed. Stat. Ann., 1905, p. 341; 2 U. S. Comp. Stat., 1901, p. 1455; Rev. Stat. U. S., 1878, Secs. 2380, 2381; Act of March 3, 1863, 12 Stat. L. 754.

Land reserved for Indian tribes is not a part of the "public lands," and is not subject to the Acts of Congress relating to townsites. *King v. McAndrews*, 111 Fed. Rep. 860, 50 C. C. A. 29.

For Indian right of occupancy, see Secs. 404, 405, 415.

improvements, such a map and statement to be verified under oath; and a verified transcript of the same, within 30 days after its filing, must be transmitted to the General Land Office, accompanied by the testimony of two witnesses that such city or town has been established in good faith, and when the premises are within the limits of an organized land district a similar statement shall be filed with the register and receiver thereof. The President is then authorized to cause the lots embraced within the limits of such city or town to be offered at public sale to the highest bidder; and such lots that may not be thus disposed of shall thereafter be liable to private entry, at such price as the Secretary of the Interior may order from time to time. When such cities or towns are established upon unsurveyed lands, after the extension thereto of the public surveys, the extension limits of the premises may be adjusted according to those lines, where it can be done without interference with rights which may be vested by sale. Patents for all lands so disposed of shall issue as in ordinary cases.²

Third.—Whenever any portion of the public lands has been already or may be settled upon and occupied as a townsite, not subject to entry under the agricultural pre-emption laws, it is lawful for the corporate authorities thereof, or if it be unincorporated, for the judge of the County Court of the county, to enter at the proper land office, and at the minimum price, the land so settled and occupied “in trust for the several use and benefit of the inhabitants thereof, according to their respective interest”; the execution of this trust, as to the disposal of such lots in such town, and the proceeds of the sales thereof, is to be conducted under the regulations as may be prescribed by the legislative authority of the State or Territory in which the town may be situated.³

In no case, however, may townsites be located or any title acquired in that manner upon or to any known mineral lands, or to

26 Fed. Stat. Ann., 1905, p. 341;
2 U. S. Comp. Stat., 1901, p. 1455;
Rev. Stat. of U. S., 1878, Sec. 2382;
Act of July 4, 1864, 13 Stat. L. 343.

See *Jones v. Petaluma*, 36 Cal. 230;
Aleman y v. Petaluma, 38 Cal. 553;
2 Copp's Public Land Laws, 1011.

36 Fed. Stat. Ann., 1905, p. 344;
2 U. S. Comp. Stat., 1901, p. 1487;
Rev. Stat. of U. S., 1878, Secs. 2387-
2394; Act of March 2, 1867, 14 Stat.
L. 541.

See, also, 2 Copp's Public Land
Laws, 1012.

any valid mining claim or to the prejudice of any vested rights to water that naturally flows over or adjoins the premises.⁴

§ 432. How the Government disposes of its lands—Through the General Land Office—To individuals.—The United States, by general Congressional laws, also has a number of methods for the disposal of its lands upon the public domain to individuals. Among these Acts still in effect are the Homestead, Desert Land, Military Land Warrant, Public Sale, Timber Lands, Mineral and Coal Lands, Carey and National Reclamation Acts. Besides these there were the Pre-emption and Timber Culture Acts which have been repealed. All of these Acts provide for the disposal of the lands coming within the character named in the respective Acts through the General Land Office, and under rules promulgated by the Secretary of the Interior. These Acts, as a general thing, provide for the disposition of much smaller tracts of land than those which we have discussed in the previous sections, and to individuals, instead of railroad companies, States, or municipal corporations.¹ A short discussion of each of these Acts is necessary, especially in relation to the waters which flow through these lands. One must understand when the rights of the parties acquiring the lands first attached both as to the soil and the water. If the use of the water, which naturally runs through these lands, was acquired with the land, or was acquired separately from it by other parties, we must know how this came about. There are also many other questions as to the relationship of the soil and water which we will discuss.²

§ 433. Disposal to individuals—Pre-emptions.—One of the early methods which the Government had of disposing of the lands of the public domain was under the pre-emption laws. By the Act of June 2, 1862,¹ it was provided that all lands belonging to the

⁴ Deffenback v. Hawke, 115 U. S. 392, 29 L. Ed. 423, 6 Sup. Ct. Rep. 95.

Pre-existing water rights not affected by Congressional grants, see Secs. 446, 804-809.

¹ See Secs. 428-431.

² For rights between settlers and appropriators, see Secs. 810-823.

¹ Rev. Stat. of U. S., 1878, Secs. 2257-2288; 6 Fed. Stat. Ann., 1905, pp. 278-285, note, and authorities cited; 2 U. S. Comp. Stat. 1379.

For original Act of June 2, 1862, see 12 Stat. L. 413. This Act superseded the Act of September 4, 1841, 5 Stat. L. 455.

United States, to which the Indian title had been or might thereafter be extinguished,² should be subject to the right of pre-emption, under the conditions, restrictions, and stipulations provided by law. The lands excluded from the right of pre-emption were, all Government reservations,³ lands selected as sites for cities or towns,⁴ lands actually settled for trade and business and not for agriculture, and lands on which are situated any known salines or mines.⁵ The individuals entitled to take advantage of the law were, every person, being at the head of a family, a widow, or single person, over the age of 21 years, and a citizen of the United States, or having filed a declaration of intention to become such, except those persons who were the owners of 320 acres of land in any State or Territory; and those persons who quit or abandon their own land to reside on the public lands in the same State or Territory. The amount of land which might be entered was not more than 160 acres, and the method was for the pre-emptor to go upon the land and make his settlement first, then after this he must file his declaratory statement with the local land office, within 30 days after the settlement, if the land is surveyed and offered for sale, within three months if the land is surveyed but not offered for sale, and within three months, after the plat is filed in the district land office, if the land at the time of its settlement was unsurveyed, and not offered for sale. Within 30 months the claimant must have made his proof of settlement, residence, and improvements, and upon the payment of \$1.25 per acre he was entitled to his patent. The right of the pre-emptor first attached to the land, if he complied with the law in other respects so as to secure his patent at the time of his settlement upon the land.⁶

² For Indian right of occupancy, see Secs. 404, 405, 415.

³ For Government reservations, see Secs. 413-426.

⁴ For townsites, see Sec. 431.

⁵ For mineral lands, see Sec. 440.

⁶ In *Shepley v. Cowan*, 91 U. S. 330, 23 L. Ed. 424, it was held that the party who took the initiatory step in such cases, if followed up to patent, was deemed to have acquired the better right as against others to the premises; and that where a party has

settled upon public land with a view to acquire a right to pre-emption, the land being open to settlement, his right thus initiated is not prejudiced by a refusal of the local land officers, to receive his proofs of settlement, upon an erroneous opinion that the land was reserved from sale.

See, also, *Johnson v. Towsley*, 80 U. S. 13 Wall. 72, 20 L. Ed. 486; *Moore v. Robins*, 96 U. S. 530, 24 L. Ed. 848; *Tyler v. Green*, 28 Cal. 406, 87 Am. Dec. 130, and note; *Gimmy v.*

The pre-emption laws were repealed, by the Act of March 3, 1891,⁷ with the exception of Sections 2275 and 2276, relating to school lands, and Section 2286, relating to pre-emption by counties for seats of justice. However, all *bona fide* claims lawfully initiated before the passage of the repealing Act might be perfected upon due compliance of law, in the same manner, upon the same terms and conditions, and subject to the same limitations, forfeitures, and contests, as if the repealing Act had not been passed. As to the right of the pre-emptor as a riparian owner to the use of the waters of the natural streams and other bodies, flowing by or on his land, in those jurisdictions where those rights are allowed by the State law, they relate back to the first settlement upon the land in all cases where the claim went to patent. The rule in these cases and those of homestead claims is the same.⁸

§ 434. Disposal to individuals—Homestead entries.—One of the principal methods by which the United States has disposed and is disposing of its public lands is under the homestead law. This law is in many respects similar to the pre-emption law now repealed.¹ By this method a person who is competent may make an entry in the local land office of the land selected, not to exceed 160 acres, which is subject to homestead entries, and by improving and cultivating the same, and residing upon the land continuously for five years, and upon making final proof of such residence and improvements, is entitled to receive his patent, without the payment of any money except a small sum for office fees.² The present homestead laws are based upon the original Act of May 20, 1862.³

Culverson, 5 Sawy. 605, Fed. Cas. No. 5454.

This law has been construed many times by the Courts, but a discussion of these decisions is unnecessary in this work.

For water rights as between claimants and appropriators, see Secs. 810-823.

⁷ 6 Fed. Stat. Ann., 1905, p. 285; 2 U. S. Comp. Stat., 1901, p. 1385; 26 Stat. L. 1097.

⁸ For homesteads, see Secs. 434, 435.

For contests between settlers and

appropriators as to water rights, see Secs. 810-823.

¹ For pre-emption law, see Sec. 433.

² For the homestead laws, see 6 Fed. Stat. Ann., 1905, pp. 285-331; 2 U. S. Comp. Stat., 1901, pp. 1386-1421; Rev. Stat. of U. S., Secs. 2289-2317.

See, also, 10 Fed. Stat. Ann., 1905, pp. 357-401; Fed. Stat. Ann. Supp., 1907, pp. 279, 288.

³ For original Act, see Rev. Stat. of U. S., Sec. 2289; 6 Fed. Stat. Ann., 1905, p. 286, note; 12 Stat. L. 392.

The Act, however, has been amended in many ways. But the sole purpose of the law as it was originally enacted and as it now stands has not changed; and that purpose is a free home to any citizen of the United States, who is eligible, and who desires by his industry to make one for himself and his family. The homestead settler is protected by the law from all debts contracted prior to the issuing of the patent, and State legislation can not interfere with this exemption.⁴

The law also provides that after a residence of 14 months, should the settler desire a patent, he may commute his homestead entry, by paying to the United States the minimum price for the land entered.⁵

By the Act of February 8, 1908, any person who, prior to the passage of the Act, had made an entry under the homestead laws, but from any cause has lost, forfeited, or abandoned the same, shall be entitled to the benefits of the law as though such former entry had not been made, except in the case where the former entry was canceled for fraud.⁶ A homestead claim is initiated by an entry of the land, which is effected by making an application at the proper land office, filing the required affidavit, and paying the office fees required by the statute.⁷ But an inceptive right to make a homestead entry may be acquired even before the date of entry. Under the provisions of the Act of May 14, 1880,⁸ it is provided

⁴ Seymour v. Sanders, 3 Dill. 437; Fed. Cas. No. 12,690; Russell v. Lowth, 21 Minn. 167, 18 Am. Rep. 389; Weare v. Johnson, 20 Colo. 363, 38 Pac. Rep. 374; *In re* Daubner, 96 Fed. Rep. 805; State v. O'Neil, 7 Ore. 141; Page v. Peters, 70 Wis. 178, 5 Am. St. Rep. 156.

The policy of the Homestead Act looks to the holding for a term of years by an actual settler with a view to acquiring a home for himself. In encouragement of such settlers, and none others, homesteads have been freely granted by the Government. Adams v. Church, 193 U. S. 510, 48 L. Ed. 769, 24 Sup. Ct. Rep. 512; Moss v. Dowman, 176 U. S. 413, 44 L. Ed. 526, 30 Sup. Ct. Rep. 429.

⁵ 6 Fed. Stat. Ann., 1905, p. 317; 2 U. S. Comp. Stat., 1901, p. 1406; Act of March 3, 1891, 26 Stat. L. 1098; United States v. Freyberg, 32 Fed. Rep. 195; United States v. Howard, 37 Fed. Rep. 666; Thrift v. Delaney, 69 Cal. 188, 10 Pac. Rep. 475.

⁶ For Act of February 8, 1908, see Supp. Fed. Stat. Ann., 1909, p. 545; 35 Stat. L. 40.

See circular, February 28, 1908, 26 Land Dec. 291.

⁷ Sturr v. Beck, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350, affirming 6 Dak. 71, 50 N. W. Rep. 486.

⁸ 6 Fed. Stat. Ann., 1905, p. 301; 2 U. S. Comp. Stat., 1393; 21 Stat. L. 141, 31 Stat. L. 683.

that any settler who has settled, or who shall hereafter settle, on any of the public lands of the United States, whether surveyed or unsurveyed, with the intention of claiming the same under the homestead laws, shall be allowed the same time to file his homestead application as was then allowed settlers under the pre-emption laws to put their claims on record, and that his rights shall relate back to the date of the settlement;⁹ provided, of course, that he complies with the law and obtains a patent for the land. The settlement defeats all claims either to the land, or to the use of the water as a riparian right, between its date and the date of the filing of the homestead entry.¹⁰ One of the most recent amendments to the homestead laws is the Act of June 22, 1910,¹¹ which permits entries to be made on the unreserved public lands of the United States, exclusive of Alaska, which have been withdrawn or classified as coal lands, or are lands valuable for coal, with a reservation to the United States of the coal in such lands and of a right to prospect for, mine, and remove the same. Therefore, as to the coal deposits in these lands, the patentee takes under his patent merely the surface right.¹² The last Act was that approved June 6, 1912,¹³ and

⁹ Under Sec. 2264, U. S. Rev. Stat., 1878, in effect at this time, on lands surveyed and subject to private entry, the pre-emption claimant was required to file his declaratory statement within 30 days after the date of his settlement on the land.

Under Sec. 2265, on lands surveyed, but not yet proclaimed for sale, the claimant was required to make known his claim to the register of the proper land office, within three months from the time of settlement.

Under Sec. 2265, on unsurveyed lands, the claimant was required to file his statement within three months from the date of the receipt at the district land office of the approved plat of the township embracing such pre-emption settlement.

¹⁰ *Sturr v. Beck*, *supra*; *Faulk v. Cooke*, 19 Ore. 455, 26 Pac. Rep. 662, 20 Am. St. Rep. 836.

The purpose of this Act is to permit an inceptive right to be obtained under the homestead law in a manner other than by filing an entry for the land. *Sproat v. Durland*, 2 Okla. 24, 35 Pac. Rep. 682, 886; *Reaves v. Oliver*, 3 Okla. 62, 41 Pac. Rep. 353.

For rights as between settlers and appropriators of water, see Secs. 810-823.

¹¹ For full text of Act, see Sec. 443.

¹² Sixty-first Congress, 2d Session, Chap. 318, p. 583.

That this Act also applies to desert land entries, see Chap. 66.

That it applies to selections under the Carey Act, see Chap. 67.

That it applies to reservations under the National Reclamation Act, see Chap. 65.

¹³ Public, No. 179.

provides for but three years' residence upon the land, but also provides that certain portions must be cultivated before final proof.

§ 435. Disposal to individuals—Homestead entries—Enlarged homesteads.—By the Act known as the Enlarged Homestead Act of February 19, 1909,¹ it was provided that any person who is a qualified entryman under the homestead laws of the United States may enter, by legal subdivisions, under the provisions of the Act, in the States of Colorado, Montana, Nevada, Oregon, Utah, Washington, and Wyoming, and the Territories of Arizona and New Mexico, 320 acres, or less, of non-mineral, non-irrigable, unreserved and unappropriated surveyed public lands which do not contain merchantable timber, located in a reasonably compact body, and not over one and one-half miles in extreme length: *Provided*, that no lands shall be subject to entry under the provisions of the Act until such lands shall have been designated by the Secretary of the Interior as not being, in his opinion, susceptible of successful irrigation at a reasonable cost from any known source of water supply. That any homestead entryman of lands of the character in the Act described, upon which final proof has not been made, shall have the right to enter public lands, subject to the provisions of the Act, contiguous to his former entry, which shall not, together with the original entry, exceed 320 acres, and residence upon and cultivation of the original entry shall be deemed as residence upon and cultivation of the additional entry. Upon making proof, in addition to that under the regular Homestead Act, the entryman must prove that at least one-eighth of the area embraced in his entry was continuously cultivated to agricultural crops other than native grasses, beginning with the second year of the entry, and at least one-fourth so continuously cultivated, beginning with the third year of the entry. Regular homestead entries are not affected by the provisions of the Act and no entry made under this Act shall be commuted.

Section 6 of the Act is made applicable to Utah alone, and provides that, whenever the Secretary of the Interior shall find that any tracts of land in that State, subject to entry under the Act, which lands do not have upon them a sufficient supply of water suitable for domestic purposes as would make continuous residence

¹ Supp. Fed. Stats. Ann., 1909, p. 560; 35 Stat. L. 639.

47—Vol. I—Kin. on Irr.

upon the lands possible, he may, in his discretion, designate such tracts of land, not exceeding the aggregate of 2,000,000 acres, and thereafter they shall be subject to entry under the Act *without the necessity of residence*: *Provided*, that in such event the entryman on any such entry shall in good faith cultivate not less than one-eighth of the entire area during the second year, one-fourth during the third year, and one-half during the fourth and fifth years after the date of such entry, and that after entry and until final proof of the entryman shall reside within such distance of said land as will enable him successfully to farm the same as required by this section.² The original Act did not apply to the State of Idaho, but by the Act of June 17, 1910,³ the right of making enlarged homestead entries was extended to that State, including the provisions of Section 6 above, originally applicable to Utah alone.

§ 436. **Disposal to individuals—Timber culture.**—In many parts of the public land States and Territories are great stretches of country, which in their natural condition, were without a tree. This was especially true in the Great Plains country and also in many portions of the arid West. In order to relieve the barren condition in this respect, and to establish forests throughout the country, where there were none, Congress in 1873 first provided that every person having a homestead on the public domain, who, at the end of the third year of his residence thereon, should have had, for two years, one acre of timber in a good thrifty condition, for each and every 16 acres of such homestead, should upon due proof of the fact receive his patent for such homestead, and thus relieve him of two years' required residence under the homestead laws. This Act was amended a number of times as a part of the homestead laws,¹ when by the Act of June 14, 1878,² all prior Acts upon the subject were superseded. This Act provided that any person having the requisite age and citizenship who should plant, protect, and keep in a healthy growing condition for eight years 10 acres of timber, on any quarter section of the public lands of the United States, or the same proportionate amount for entries of smaller

² See, also, for dry farming, Chap. 66.

³ See 61st Congress, 2d Session, Chap. 298, p. 531.

¹ See Secs. 2317, 2464-2468, Rev. Stat. of U. S., 1878; 6 Fed. Stat. Ann.,

1905, p. 494, note, and authorities cited; 2 U. S. Comp. Stats., 1901, p. 1534.

² 6 Fed. Stat. Ann., 1905, p. 495, 496; 2 U. S. Comp. Stats., 1901, p. 1534; 20 Stat. L. 113.

acreage, might, upon the proof of such fact, receive a patent therefor. This Act was in full force and effect from 1878 until the passage of the Act of March 3, 1891, by which Act it was repealed.³ The inception of a claim of this nature was the filing of the necessary application as provided for in Section 2 of the Act. No residence was required and a timber culture claim might be taken in addition to all other land claims.

§ 437. **Disposal to individuals—Bounty lands.**—Still another method of the disposal of the public lands is by the issuance of military land warrants for meritorious service in the various wars of this country. Military land warrants have been issued to individuals from time to time under various Acts of Congress, and the lands granted under them are called bounty lands.¹ The law provides that the lands for which warrants have been, or may be hereafter issued in pursuance of law, may be located in one body, according to the legal subdivisions of the public lands, upon any of the lands of the United States, subject to private entry at the time of such location and at the minimum price. The location of land under a military land warrant is more in the nature of a sale than a grant or donation and is disposed of through the General Land Office, and the term "all lands remaining unsold" is considered to except lands located under land warrants.² Under the law all military warrants for military bounty lands which have been or may hereafter be issued under any law of the United States, and all valid locations of the same which have been or may hereafter be made, are assignable by deed or other instrument of writing.³ The inception of the right to the land under these warrants attaches

³ 6 Fed. Stat. Ann., 1905, p. 497;
² U. S. Comp. Stat., 1901, p. 1535;
 26 Stat. L., 1905.

¹ For the various Acts of Congress, see 6 Fed. Stat. Ann., 1905, pp. 380-392; 2 U. S. Comp. Stat., 1901, pp. 1491-1501; Rev. Stat. of U. S., 1878, Secs. 2414-2446.

² *Culver v. Uthe*, 116 Ill. 643; affirmed, 133 U. S. 655, 33 L. Ed. 776, 10 Sup. Ct. Rep. 415, where the Court held that the giving of a military land warrant by the holder thereof

to the proper officers of the Government, with directions that it be located in a designated tract of public land, constituted a sale of that tract within the meaning of that Act.

³ 7 Op. Atty. Gen. 659; *Johnston v. Fluetsch*, 176 Mo. 452, 75 S. W. 1005; *Bronson v. Kukuk*, 3 Dill. 490, 4 Fed. Cas. 1,929; *Durham v. Hussman*, 88 Iowa 29, 55 N. W. 11; affirmed, 165 U. S. 144, 41 L. Ed. 664, 17 Sup. Ct. Rep. 253.

when the entry is made in any land office and the original owner or his assignee receives his certificate for the same.⁴

§ 438. Disposal to individuals—Public and private sale.—The United States may sell its lands at either public auction or at private sale.¹ By the Act of March 3, 1891,² the sale of the public lands by these methods is prohibited except abandoned military or other reservations and isolated and disconnected fractional tracts, which the Commissioner of the General Land Office is authorized to sell for not less than \$1.25 per acre, and upon 30 days' notice.³ The inception of the right of the parties purchasing land at sales of this nature attaches upon the purchase and payment for the land; the payment must be made the day of the purchase.

§ 439. The sale of timber lands under the Timber and Stone Act.—The Act of June 3, 1878, and its amendments,¹ authorizes the sale of the timber lands of the United States, within all the public land States.² This was the first Act of Congress which permitted an individual to purchase timber lands from the Government as such. The Act as originally passed applied only to the States of California, Oregon, and Nevada, and the then Territory of Washington. On August 4, 1902, the Act was amended to include

⁴ Gray v. Jones, 14 Fed. Rep. 83, 4 McCrary 515; Key v. Jennings, 66 Mo. 356; Wirth v. Branson, 98 U. S. 118, 25 L. Ed. 86; Stinson v. Geer, 42 Kan. 520, 22 Pac. Rep. 586.

¹ 6 Fed. Stat. Ann., 1905, pp. 331-334; 2 U. S. Comp. Stat., 1901, p. 1442; Rev. Stat. U. S., 1878, Secs. 2353-2357.

² 5 Fed. Stat. Ann., p. 331; 2 U. S. Comp. Stat., 1901, p. 1443; 26 Stat. L. 1099.

³ See, also, 6 Fed. Stat. Ann., 1905, p. 525; 2 U. S. Comp. Stat., p. 1519; Rev. Stat. U. S., 1878, Sec. 2455; Act of February 26, 1895, 28 Stat. L. 687.

¹ 7 Fed. Stat. Ann., 1905, pp. 300-306; 2 U. S. Comp. Stat., 1901, pp. 1545-1547; 20 Stat. L. 89; 27 Stat. L. 348.

² The public land States are those

States wherein are still to be found lands belonging to the United States, which may be acquired by individuals under some Act of Congress. These States are Alabama, Arkansas, California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Utah, Washington, Wyoming, Arizona, New Mexico, and the District of Alaska. In Ohio, Indiana, and Illinois the public land has practically all been disposed of, but at rare intervals the attention of the Land Department is called to some isolated tract the title to which is found to be in the Government. 6 Fed. Stat. 256, note; Circular of General Land Office of January 25, 1904.

all of the "public land States." The Act with its amendments provides as follows:

Sec. 1. *Sale of timber and stone lands.*—"That surveyed public land of the United States within the public land States, not included within military, Indian, or other reservations of the United States, valuable chiefly for timber, but unfit for cultivation, and which have not been offered at public sale according to law, may be sold to the citizens of the United States, or persons who have declared their intention to become such, in quantities not exceeding 160 acres to any one person or association of persons, at the minimum price of \$2.50 per acre; and lands valuable chiefly for stone may be sold on the same terms as timber lands: *Provided*, that nothing herein shall defeat or impair any *bona fide* claim under any law of the United States, or authorize the sale of any mining claim, or the improvements of any *bona fide* settler, or lands containing gold, silver, cinnabar, copper, or coal, or lands selected by the said States under any law of the United States donating lands for internal improvements, education or other purposes: *And provided, further*, that none of the rights conferred by the Act approved July 26, 1866, entitled 'An Act granting the right of way to ditch and canal owners over the public lands, and for other purposes' shall be abrogated by this Act; and all patents granted shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under and by the provisions of this Act; and such rights shall be expressly reserved in any patent issued under this Act."³

Sec. 2. *Application for purchase—Penalty for false swearing, etc.*—"That any person desiring to avail himself of the provisions of this Act shall file with the register of the proper district a written statement in duplicate, one of which is to be transmitted to the General Land Office, designating by legal subdivisions the particular tract of land he desires to purchase, setting forth that the same is unfit for cultivation, and valuable chiefly for its timber or stone; that it is uninhabited; contains no mining or other improvements,

³ The Act of July 26, 1866, referred to in the text of the above Act, are Secs. 2338, 2339, 2341-2343, and 2477, U. S. Rev. Stat., 1878. See, also, 5 Fed. Stat., pp. 52, 53, 55, and

the statutes relating to the Public lands, 6 Fed. Stat. 1905, p. 188, and also 2 U. S. Comp. Stat., 1901, pp. 1436, 1437.

except for ditch or canal purposes, where any such do exist, save such as were made by or belong to the applicant, nor, as deponent verily believes, any valuable deposit of gold, silver, cinnabar, copper, or coal; that deponent has made no other application under this Act; that he does not apply to purchase the same on speculation, but in good faith to appropriate it to his own exclusive use and benefit; and that he has not, directly or indirectly, made any agreement or contract, in any way or manner, with any person or persons whatsoever, by which the title which he may acquire from the Government of the United States should inure, in whole or in part, to the benefit of any person except himself; which statement must be verified by the oath of the applicant before the register or receiver of the land office within the district where the land is situated; and if any person taking such oath shall swear falsely in the premises, he shall be subject to all the pains and penalties of perjury, and shall forfeit the money which he has paid for said lands, and all right and title to the same; and any grant or conveyance which he may have made, except in the hands of *bona fide* purchasers, shall be null and void."

Sec. 3. *Publication of application—Proofs—Entry and patent—Objections.*—"That upon the filing of said statement, as provided in the second section of this Act, the register of the land office shall post a notice of such application, embracing a description of the land by legal subdivisions, in his office, for a period of 60 days, and shall furnish the applicant a copy of the same for publication, at the expense of such applicant, in a newspaper published nearest the location of the premises, for a like period of time; and after the expiration of said 60 days, if no adverse claim shall have been filed, the person desiring to purchase shall furnish to the register of the land office satisfactory evidence; *first*, that said notice of the application prepared by the register aforesaid was duly published in a newspaper as therein required; *secondly*, that the land is of the character contemplated in this Act, unoccupied and without improvements, other than those excepted, either mining or agricultural, and that it apparently contains no valuable deposits of gold, silver, cinnabar, copper, or coal; and upon payment to the proper officer of the purchase money of the said land, together with the fees of the register and receiver, as provided for in case of mining claims in the twelfth section of the Act approved May 10, 1872, the applicant may be permitted to enter said tract, and,

on the transmission to the General Land Office of the papers and testimony in the case, a patent shall issue thereon: *Provided*, that any person having a valid claim to any portion of the land may object, in writing, to the issuance of a patent to lands so held by him, stating the nature of his claim thereto; and evidence shall be taken, and the merits of said objection shall be determined by the officers of the land office, subject to appeal, as in other land cases. Effect shall be given to the foregoing provisions of this Act by regulations to be prescribed by the Commissioner of the General Land Office."

Sec. 4. *Unlawful cutting of timber on public lands—Penalty—Exceptions.*—"That after the passage of this Act it shall be unlawful to cut, or cause, or procure to be cut, or wantonly destroy, any timber growing on any lands of the United States, in said States and Territories, or remove, or cause to be removed, any timber from said public lands, with the intent to export or dispose of the same; and no owner, master, or consignee of any vessel, or owner, director, or agent of any railroad, shall knowingly transport the same, or any lumber manufactured therefrom; and any person violating the provisions of this section shall be guilty of a misdemeanor, and, on conviction, shall be fined for every such offense a sum of not less than \$100 nor more than \$1000: *Provided*, that nothing herein contained shall prevent any miner or agriculturist from clearing his land in the ordinary working of his mining claim, or preparing his farm for tillage, or from taking the timber necessary to support his improvements, or the taking of timber for the use of the United States; and the penalties herein provided shall not take effect until 90 days after the passage of this Act."

Sec. 5. *Relief of persons prosecuted for cutting timber—Disposal of moneys collected.*—"That any person prosecuted in said States and Territories for violating Section 2461 of the Revised Statutes of the United States who is not prosecuted for cutting timber for export from the United States, may be relieved from further prosecution and liability therefor upon payment, into the Court wherein said action is pending, of the sum of \$2.50 per acre for all lands on which he shall have cut or caused to be cut timber, or removed or caused to be removed the same: *Provided*, that nothing contained in this section shall be construed as granting to the person hereby relieved the title to said lands for said payment; but he shall have the right to purchase the same upon the same terms and con-

ditions as other persons, as provided hereinbefore in this Act: *And further provided*, that all moneys collected under this Act shall be covered into the treasury of the United States. And Section 4751 of the Revised Statutes is hereby repealed, so far as it relates to the States and Territories herein named."

Sec. 6. *Repeal*.—"That all Acts and parts of Acts inconsistent with this Act are hereby repealed."

The scope of this work will not permit our going into the discussion of the construction or the effects of this Act. All this will be taken up in a later work to be published shortly after the publication of the present work.⁴ But we will here say this, that, although the Timber and Stone Act is still upon the statute books, this Act has been the source of more fraud and more unlawful destruction of the timber resources of this country, with its resultant damages, than almost any other Act of Congress, unless it be the companion Act known as the "Timber Cutting Act," approved upon the same day, June 3, 1878.⁵

§ 440. **Disposal to individuals—Mineral lands.**—It is not the purport of this work to go into all of the intricate questions involved in the subject of the disposal of the mineral lands of the United States. That subject would lead us into a discussion of mining laws and would require a separate work. Then, again, the subject has been most fully covered in those two most excellent but, unfortunately, rival works, by Mr. Lindley,¹ and Mr. Snyder.²

It was not until the Act of July 4, 1866, that Congress took any steps toward the disposal of the mineral lands of the public domain.³ By that Act all mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, were declared to be free and open to exploration and purchase, and the land in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under the regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far

⁴ See Kinney on Forests, Forestry, and Forest Laws.

⁵ 7 Fed. Stat. Ann., 1905, p. 297;
2 U. S. Comp. Stat., 1901, p. 1528;
20 Stat. L. 88.

¹ See Lindley on Mines, 2d Ed.

² See Snyder on Mines, 1902.

³ For Act of Congress of July 4, 1866, and amendments thereto, see
5 Fed. Stat. Ann., 1905, pp. 1-57;
2 U. S. Comp. Stat., 1901, pp. 1423-1441; Rev. Stat. U. S. Secs. 2318-2352.

as the same are applicable and not inconsistent with the laws of the United States. The most important amendment to the Act of 1866 was the Act of May 10, 1872, wherein it was prescribed that no location of a lode mining claim shall be made until the discovery of the vein or lode within the limits of the claim located, and that the size of each claim shall not exceed 1500 feet in length along the vein or lode, nor more than 300 feet on each side of the middle of the vein at the surface. A possessory title can always be maintained by the locators of all mining locations, so long as the locators comply with the laws of the United States and with the State, Territorial, and local regulations governing the same; and by so complying the locators shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations.

One of the requirements of the Act of 1872 was that on each claim located after the tenth day of May, 1872, and until patent has been issued therefor, not less than \$100 worth of labor shall be performed or improvements made during each year. The claims may be sold by the original locators at any time after the location thereof. The law also has detailed provisions as to how patents may be obtained for the claims, thus vesting the legal title in the locators or their assigns. The sum of \$5 per acre must be paid for the land, upon proof that the laws, rules, and regulations have been complied with and that there are no adverse titles against the claims.

Claims usually called "placers," including all forms of deposits, excepting veins of quartz or other rock in place, are also made subject to entry and patent. Where such placer claims are upon the surveyed lands, they must conform to legal subdivisions with the United States system of public land surveys, and no such location shall include more than 20 acres for each individual claimant; but where placer claims can not be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands; but no location of a placer claim, made after the ninth day of July, 1870, shall exceed 160 acres for any association of persons. Provisions are also made for patenting these claims, upon full compliance with the law and the payment at the rate of \$2.50 per acre.

§ 441. Disposal to individuals—Coal lands.—Coal lands are also disposed of in the following manner. Every person above the age

of 21 years, of the requisite citizenship as above, or any association of persons severally qualified, shall, upon application to the register of the proper land office, have the right to enter, by legal subdivisions, any quantity of vacant coal lands of the United States not otherwise appropriated or reserved, not exceeding 160 acres to each individual person, or 320 acres to such association, upon payment to the receiver of not less than \$10 per acre for such lands, where the same shall be situated more than fifteen miles from any completed railroad, and not less than \$20 per acre for such lands as shall be within 15 miles of such road.¹

§ 442. Coal lands—Surface agricultural entries thereon—Reservation of the coal.—It had long been recognized that many of the coal lands owned by the United States, especially those lying within the arid and semi-arid regions, were valuable not only for the coal which underlaid the surface, but also for agriculture upon the surface. But Congress took no step toward the segregation of these interests until the Act of March 3, 1909, wherein it was provided that, where land had once been entered as agricultural lands, if they were subsequently discovered and classified to be coal lands, the entryman, instead of losing all his rights to the same, might elect to receive a patent for the land covered by his entry, which should contain a reservation to the United States of all the coal in said lands, and the right to prospect for, mine, and remove the same. The full text of the Act of March 3, 1909, entitled, "An Act for the protection of the surface rights of entrymen,"¹ is as follows:

"That any person who has in good faith located, selected, or entered under the non-mineral land laws of the United States any lands which subsequently are classified, claimed, or reported as being valuable for coal, may, if he shall so elect and upon making satisfactory proof of compliance with the laws under which such lands are claimed, receive a patent therefor, which shall contain a reservation to the United States of all coal in said lands, and the right to prospect for, mine, and remove the same. The coal deposits in such lands shall be subject to disposal by the United States

¹ 5 Fed. Stat. Ann., 1905, pp. 55-57; entries on coal lands, see Secs. 442, 2 U. S. Comp. Stat., 1901, pp. 1440-443.

1442. ¹ Supp. Fed. Stat. Ann., 1909, 563; 35 Stat. L. 844.

For the right to make agricultural

in accordance with the provisions of the coal-land laws in force at the time of such disposal, but no person shall enter upon said lands to prospect for, or mine and remove coal therefrom, without previous consent of the owner under such patent, except upon conditions as to security for and payment of all damages to such owner caused thereby as may be determined by a court of competent jurisdiction: *Provided*, that the owner under such patent shall have the right to mine coal for use on the land for domestic purposes prior to the disposal by the United States of the coal deposit: *Provided, further*, that nothing herein contained shall be held to affect or abridge the right of any locator, selector, or entryman to a hearing for the purpose of determining the character of the land located, selected, or entered by him. Such locator, selector, or entryman who has heretofore made or shall hereafter make final proof, showing good faith and satisfactory compliance with the law under which his land is claimed, shall be entitled to a patent without reservation unless at the time of such final proof and entry it shall be shown that the land is chiefly valuable for coal.”

This Act applies to desert land entries,² to selections made by the State under the Carey Act,³ and to all other agricultural entries and selections by States.⁴ But Congress did not stop with the above Act. By the Act of June 22, 1910, it provided that land which had already been classified as coal lands might be entered, selected, or withdrawn, as far as the right to the surface was concerned, and patented with a reservation of the coal and the right to mine the same.

§ 443. Coal lands—Right to make surface agricultural entries, selections, and withdrawals—Reservation of coal.—By the Act of June 22, 1910, entitled, “An Act to provide for agricultural entries on coal lands,”¹ it was provided that unreserved public lands of the United States, exclusive of Alaska, which have been withdrawn or classified as coal lands, or are valuable for coal, shall be subject to entry under the homestead laws,² to entry under the

² See for desert land entries, Chap. 66.

³ See Chap. 67; State of Wyoming, 38 Land Dec. 508.

⁴ Circular, 37 Land Dec. 528, 38 Land Dec. 181, 183, 576; Martin v.

Gilbert, 38 Land Dec. 536; State of Utah, 38 Land Dec. 245.

¹ Public—No. 227; 36 Stat. L. 583; 61st Congress, 2d Session, Chap. 318, p. 583.

² See Secs. 434, 435.

Desert Land Act,³ to selection under the Carey Act,⁴ and to reservation under the National Reclamation Act, whenever such entry, selection, or withdrawal shall have been made with a view of obtaining or passing title, with a reservation to the United States of the coal in such lands.

The full text of said Act is as follows: That from and after the passage of this Act unreserved public lands of the United States, exclusive of Alaska, which have been withdrawn or classified as coal lands, or are valuable for coal, shall be subject to appropriate entry under the homestead laws by actual settlers only, the desert land law, to selection under Section 4 of the Act approved August 18, 1894, known as the Carey Act, and to withdrawal under the Act approved June 17, 1902, known as the Reclamation Act, whenever such entry, selection, or withdrawal shall be made with a view of obtaining or passing title, with a reservation to the United States of the coal in such lands and of the right to prospect for, mine, and remove the same. But no desert entry made under the provisions of this Act shall contain more than 160 acres, and all homestead entries made hereunder shall be subject to the conditions, as to residence and cultivation, of entries under the Act approved February 19, 1909, entitled "An Act to provide for an enlarged homestead": *Provided*, that those who have initiated non-mineral entries, selections, or locations in good faith, prior to the passage of this Act, on lands withdrawn or classified as coal lands may perfect the same under the provisions of the laws under which said entries were made, but shall receive the limited patent provided for in this Act.

Sec. 2. That any person desiring to make entry under the homestead laws or the desert land law, any State desiring to make selection under Section 4 of the Act of August 18, 1894, known as the Carey Act, and the Secretary of the Interior in withdrawing under the Reclamation Act lands classified as coal lands, or valuable for coal, with a view of securing or passing title to the same in accordance with the provisions of said Acts, shall state in the application for entry, selection, or notice of withdrawal that the same is made in accordance with and subject to the provisions and reservations of this Act.

Sec. 3. That upon satisfactory proof of full compliance with the

³ See Secs. 1287-1311.

⁴ See Secs. 1312-1336.

provisions of the laws under which entry is made, and of this Act, the entryman shall be entitled to a patent to the land entered by him, which patent shall contain a reservation to the United States of all the coal in the lands so patented, together with the right to prospect for, mine, and remove the same. The coal deposits in such lands shall be subject to disposal by the United States in accordance with the provisions of the coal land laws in force at the time of such disposal. Any person qualified to acquire coal deposits or the right to mine and remove the coal under the laws of the United States shall have the right, at all times, to enter upon the lands selected, entered, or patented, as provided by this Act, for the purpose of prospecting for coal thereon upon the approval by the Secretary of the Interior of a bond or undertaking to be filed with him as security for the payment of all damages to the crops and improvements on such lands by reason of such prospecting. Any person who has acquired from the United States the coal deposits in any such land, or the right to mine or remove the same, may re-enter and occupy so much of the surface thereof as may be required for all purposes reasonably incident to the mining and removal of the coal therefrom, and mine and remove the coal, upon payment of the damages caused thereby to the owner thereof, or upon giving a good and sufficient bond or undertaking in an action instituted in any competent court to ascertain and fix said damages: *Provided*, that the owner under such limited patent shall have the right to mine coal for use upon the land for domestic purposes at any time prior to the disposal by the United States of the coal deposits: *Provided, further*, that nothing herein contained shall be held to deny or abridge the right to present and have prompt consideration of applications to locate, enter, or select, under the land laws of the United States, lands which have been classified as coal lands with a view of disproving such classification and securing a patent without reservation.

Approved, June 22, 1910.⁵

§ 444. Desert Land Act—Carey Act—National Reclamation Act.—There are three other Acts passed by Congress for the disposal of the public lands to individuals, popularly known as the

⁵ For the construction of the above Dec. 26; Chris D. Miller, 40 Land Act, see Louis Zuckman, 40 Land Dec. Dec. 33.
25; John Wesley McClinton, 40 Land

Desert Land Act of March 3, 1877,¹ the Carey Act of August 18, 1894,² and the National Reclamation Act of June 17, 1902.³ But, as these Acts relate not only to the disposal of the public lands, but also to the appropriation of the waters flowing over the public domain for their reclamation, they will be each discussed in separate chapters in all their phases in another portion of this work, and a bare reference to these Acts under this subject is sufficient.⁴

§ 445. **Rights to land attach, when.**—As the word “entry” is of frequent occurrence in this discussion its meaning should be fully explained. As applied to the disposal of the public lands; it means that act by which an individual acquires an inceptive right of record to a portion of the unappropriated land of the public domain by filing the necessary papers in the proper office.¹ However, an equitable right, as has been seen, may attach under certain circumstances upon the mere settlement of the land and before the filing of any papers at all. And the party who takes the first step, if followed up to patent, is deemed to have acquired the better right as against all others to the premises. The patent, which is afterward issued, relates back to the date of the initiatory act, and thus cuts off all intervening claimants, whether that act be an actual settlement upon the land itself or filing the necessary papers in the land office.² Other things being equal, he who has the priority of location has the superior right, applies to all conflicting Congressional grants and also to all conflicts between these grants and the claims of settlers.³

¹ 6 Fed. Stat. Ann., 1905, pp. 392-396; 2 U. S. Comp. Stat., 1901, 1548; 19 Stat. L. 377.

For text of Act and amendments, see Chap. 66.

For the scope and construction of the Act, see Chap. 66.

That the Act confirmed the doctrine of appropriation, see Secs. 622, 623.

² 6 Fed. Stat. Ann., 1905, pp. 397, 398; 2 U. S. Comp. Stat., 1901, p. 1554; 28 Stat. L. 422.

For text of Act and amendments, see Chap. 67.

For the scope and construction of the Act, see Chap. 67.

³ 7 Fed. Stat. Ann., 1905, pp. 1098-1101; Supp. U. S. Comp. Stat., 1905, pp. 349-354; 32 Stat. L. 388.

For text of Act and amendments, see Chap. 65.

For scope and construction of Act, see Chap. 65.

⁴ See references, *supra*.

¹ Chotard v. Pope, 25 U. S. 12 Wheat. 586, 6 L. Ed. 737.

² Shepley v. Cowan, 91 U. S. 330, 23 L. Ed. 424.

³ St. Paul etc. R. Co. v. Winona etc. R. Co., 112 U. S. 720, 28 L. Ed. 872, 5 Sup. Ct. Rep. 334; Kansas Pac. R. Co. v. Dunmeyer, 113 U. S. 629, 28 L. Ed. 1122, 5 Sup. Ct. Rep. 566;

Homestead, pre-emption, or other claims, entered before the location of a railroad, though after the passage of the Land Grant Act, are not affected thereby.⁴ The policy of the Federal Government in favor of settlers upon the public land has been liberal. It recognizes their superior equity, to become purchasers of a limited extent of land, comprehending their improvements, over that of any other person.

§ 446. **Pre-existing water rights not affected by Congressional grants.**—As has been stated, no pre-existing rights to land are affected by Congressional grants.¹ This is as true of pre-existing rights to waters that naturally flow over or adjoin these lands as it is of rights to the soil, whether there are any special reservations of these water rights in the grant itself or not. This law is based upon a common principle of justice, and in pursuance of the constant policy of the Government, through Congress and the Courts, to protect any *bona fide* rights which have attached prior to grant, of those who have in good faith settled upon and improved any portion of the public domain.² And it is generally provided in the granting Act that, where lands along the line of a proposed railway are already taken up, the company may take other lands in lieu thereof as indemnity.³ But whether this right is provided for in the grant or not it is the established doctrine of the Courts that water rights, and rights of way of those who have constructed canals and ditches to be used for irrigation and in mining operations, and the right of all *bona fide* settlers upon the surveyed or unsurveyed portion of the public domain, are rights which the Government has by its conduct recognized and encouraged and is bound by that conduct to protect, even should these rights have accrued prior to the

Northern Pac. R. Co. v. St. Paul etc. R. Co., 26 Fed. Rep. 551.

⁴ See, also, Elmslee v. Young, 24 Kan. 732; Clements v. Warner, 65 U. S. 24 How. 394, 16 L. Ed. 695.

This subject will be more thoroughly treated under the subject of the doctrine of relation. See Chap. 40, Secs. 742-756.

¹ See Secs. 402, 403.

² Broder v. Natoma W. & M. Co., 101 U. S. 274, 25 L. Ed. 790, affirm-

ing 50 Cal. 621; Winona etc. R. Co. v. Barney, 113 U. S. 618, 28 L. Ed. 872, 5 Sup. Ct. Rep. 606; Burham v. Starkey, 41 Kan. 604, 21 Pac. Rep. 624.

³ Kansas Pac. R. Co. v. Atchison etc. R. Co., 112 U. S. 414, 28 L. Ed. 794, 5 Sup. Ct. Rep. 208; Winona etc. R. Co. v. Barney, *supra*.

See, also, grants to railroads, Secs. 427, 428.

Acts of 1866 or of 1870. And furthermore, Congress in making donations or grants to railroad companies can not exercise its liberality at the expense of pre-existing rights, which, though imperfect, are still meritorious, and have just claim to the protection of the legislature and the Courts.

§ 447. **Grantee takes subject to conditions annexed to grant.**—The United States as the proprietor of the public lands has, by virtue of its proprietorship, the absolute and unqualified right of disposal,¹ and neither a State nor a Territorial legislature can dictate, modify, or embarrass in any manner the right of Congress to the primary disposal of the public lands.² Also a stream or inland lake, incapable of being navigated, is naturally a part and parcel of the land, inseparably annexed to the soil, and as such, under the common law, passes to the grantee or patentee of the soil from the United States, unless certain conditions are annexed, either in the grant itself, or by some general Act of Congress prior to the grant affecting the land. The Federal Government as the proprietor of the public domain has the power to annex any conditions to grants which it sees fit. It may do this either in the grant or patent itself, conveying each particular portion of the public lands to its grantees and patentees, or it may by Congressional legislation adopt any general regulations or impose any conditions or limitations upon the title of all persons who acquire portions of the public lands from the United States. And the title so acquired will be held by the grantees, subject to such conditions or limitations.

Congress has provided by general statute that, "whenever, by priority of possession, rights to the use of water for mining, agricultural, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and decisions of Courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals, for the purpose herein specified, is acknowledged and confirmed."³ Under this Act the rights of prior appropriators to the waters of the public

¹ See Sec. 409.

² *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994.

³ Act of Congress of July 26, 1866,

7 Fed. Stat. Ann. 1905, p. 1090; 2

U. S. Comp. Stat. 1901, p. 1437; Rev. Stat. U. S. 1878, Sec. 2339; 14 Stat. L. 253.

See, also, Secs. 611-614.

domain were recognized and confirmed, and the grantees of the Government took their lands subject to those rights which had vested and accrued, although not specifically named in the patent. But Congress went still further in the Act of July 9, 1870.⁴ It provided that: All patents granted, or pre-emptions or homesteads allowed, shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired. Also by another section of the Act of 1866, it was provided: "As a condition of sale, in the absence of necessary legislation by Congress, the local legislature of any State or Territory may provide rules for working mines, involving easements, drainage, and other necessary means to complete their development; and these conditions shall be fully expressed in the patent."⁵

The patent spoken of is that issued by the United States to the purchasers of the public domain. Thus by a general statute Congress has provided for a right of way over the public lands for ditches and canals for all those who have made an appropriation of water before the lands were disposed of, and that all grantees of the Government who subsequently acquire portions of this land, shall take and hold this title *subject* to such existing rights of way; or that all grantees of public lands bordering upon a stream or lake shall hold their titles subject to any previously existing appropriation of water; or, further, that all grantees of the public lands shall take their titles, subject to the local customs or laws of the State within which the lands are situated concerning the uses of water for mining, irrigating, agricultural, and other purposes.⁶ It must be borne in mind that these conditions and limitations to the title to

⁴ 7 Fed. Stat. Ann. 1905, p. 1096; 2 U. S. Comp. Stat. 1901, p. 1437; Rev. Stat. U. S. 1878, Sec. 2340; 16 Stat. L. 218.

See, also, Secs. 615-618.

⁵ 5 Fed. Stat. Ann. 1905, p. 52; 2 U. S. Comp. Stat. 1901, p. 1436; Rev. Stat. U. S. 1878, Sec. 2338; 14 Stat. L. 252.

See, also, *People v. Dist. Ct.*, 11 Colo. 153; *Woodruff v. North Bloomfield Gravel M. Co.*, 8 Sawy. 628, 16 Fed. Rep. 25, 18 Fed. Rep. 753; *Jacob*

v. Day, 111 Cal. 577, 44 Pac. Rep. 243.

This section only provides for easements for the development of mines. *Calhoon Gold M. Co. v. Ajax G. M. Co.*, 182 U. S. 509, 45 L. Ed. 1200, 21 Sup. Ct. Rep. 885; *Amador Queen M. Co. v. Dewitt*, 73 Cal. 482, 15 Pac. Rep. 74.

⁶ *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Union M. & M.*

the lands which originally belonged to the public domain are not confined to the immediate grantees of the Federal Government. If the grantee of the Government sells his land, his purchaser only acquires the same title that he himself had, and takes the land also subject to the same conditions and limitations.

§ 448. Ownership and sovereignty distinguished—Jurisdiction.

—Running waters upon the public domain, or upon lands to which the United States still holds title, are subject and open to appropriation under the authority of the laws of the United States, which will be set forth in chapters of this work.¹ The title subsequent to the unappropriated waters still remains in the United States as the proprietor of the same.² These waters, although flowing upon the public domain of the United States, are located within the various States and Territories of the country; and, as the United States has left the entire jurisdiction over them to the States and Territories, they must be appropriated, used or transferred, according to the laws of that State or Territory through which the waters flow. Hence it follows that the United States has only the rights of a proprietor over these waters, and not the rights of a political sovereign.³ A State may determine for itself whether the common law rule in respect to riparian rights or that doctrine which obtains in the arid regions of the West of the appropriation of waters for the purpose of irrigation and other beneficial uses shall control. Congress can not enforce either rule upon any State.⁴ The same may be said relative to the lands within any State but owned by the United States. Each State has full jurisdiction over

Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

See, also, Secs. 611-620, and authorities cited; Nevada Ditch Co. v. Bennett, 30 Ore. 59, 45 Pac. Rep. 472, 60 Am. St. Rep. 777.

¹ See Arid Region Doctrine, Secs. 585-594; Congressional Laws upon the subject of waters, Secs. 596-626.

See, also, Secs. 627-640.

² See Sec. 411.

³ Farm Invest. Co. v. Carpenter, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918; Nevada

Ditch Co. v. Bennett, 30 Ore. 59, 45 Pac. Rep. 472, 60 Am. St. Rep. 777.

A State may change the common law rule, and permit the appropriation of waters for such purposes as it deems best. United States v. Rio Grande Dam & Irr. Co., 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

⁴ Kansas v. Colorado, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655, and authorities cited.

the lands within its borders as political sovereign, although the proprietor of these lands may be the United States. This of course does not include the right of the United States to the disposal of its lands, which right is vested in Congress alone.⁵ The power to enact laws governing both the land and waters within a State forms a part of the law concerning real property, and belongs exclusively to the jurisdiction of the respective States, and even Territories, so long as the laws of the same are not in conflict with the Constitution and laws of the United States.

In fact there are but a few places within the United States where the Government is both the proprietor and political sovereign, and these are fixed by the Constitution. By the sixteenth clause of the eighth section of the first article of the Constitution we find that power is given to Congress "To exercise exclusive legislation in all cases whatsoever over such district (not to exceed 10 miles square) as may, by cession of particular States and the acceptance of Congress, become the seat of the Government of the United States, and to exercise like authority over all places purchased by the consent of the legislature of the State in which the same shall be, for the erection of forts, magazines, arsenals, dock yards, and other needful buildings." So within the District of Columbia, and other places purchased and used for purposes above mentioned, the municipal powers of the Government of every description are united and are the sole governing powers.⁶ But these are the only cases within the United States in which all the powers are united in a single government. Even in cases of temporary Territorial organization a local government always exists, and the specific rules for the appropriation and use of waters, as forming a part of the law concerning real property, falls within the jurisdiction of the local laws, so long as they are not in conflict with those of the United States upon the subject. The United States is simply the proprietor of the public lands, outside of the few exceptions above noted. And whatever may be the rules adopted by the statutes or decisions of any particular State with reference to the rights of riparian owners and appropriators, still that doctrine, hereinafter described, as originating from the local customs of miners and sustained by the legisla-

⁵ *Kansas v. Colorado, supra.*

147 U. S. 282, 37 L. Ed. 170, 13 Sup.

⁶ *United States v. Hammond*, 1 Cranch C. C. 15, 26 Fed. Cas. No. 15,293; *Shoemaker v. United States*,

Ct. Rep. 361; *Capital Traction Co. v. Hof*, 174 U. S. 1, 43 L. Ed. 873, 19 Sup. Ct. Rep. 580.

tion of Congress, is confined in its operation to the public domain of the United States, and all extension of this doctrine to other lands and other proprietors, and all additional rules, must necessarily proceed from the States themselves.⁷

§ 449.—After title has passed from the United States *lex loci sitae governs*.—The title to land or water having once passed from the United States, can be acquired or lost only in the manner prescribed by the law of the State where such land or water is situated, and the Federal Courts are bound to apply the laws and rules of the State in which the property is situated, and to decide the controversy as the State Court would.¹ And the United States Government has no power to lay down any rules of law that would be binding upon its grantees after they have acquired their title from the Government concerning the use to which the lands or water must be put. All such laws come clearly within the jurisdiction of the States. Before title has passed from the Government the United States has a perfect title to the public lands and an absolute and unqualified right of disposal. All the lands and waters of the Government not appropriated by competent authority before they were acquired by the Government are in the first instance the exclusive property of the United States, to be disposed of to such persons at such times, in such manner and by such titles as the Government may deem most advantageous to the public. The right of the Government has been uniformly reserved by solemn compact upon the admission of new States into the Union, and has always been recognized and respected by the various States within which large portions of the public lands of the United States have been located, and within which many of these lands are still remaining. The legislatures of the various States in which the public lands are situated have no power to interfere and to dictate to the United States, to whom, or in what manner, or by what title, the public lands shall be conveyed in the first instance. But after the title has once passed the law of the State wherein the land is situated alone prevails.²

⁷ See *Pomeroy Rip. Rights*, Sec. 30.

¹ *Walker v. Marks*, 84 U. S. 17 Wall. 648, 21 L. Ed. 744; *Board of Suprvs. v. United States*, 85 U. S. 18 Wall. 71, 21 L. Ed. 771.

² *Irvine v. Marshall*, 61 U. S. 20 How. 558, 15 L. Ed. 994; *Vansickle v. Haines*, 7 Nev. 249; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371; 8 *Morr. Min. Rep.* 90.

As to what laws shall determine this question the true rule is, that whenever the question in any Court, State or Federal, is, whether the title to the land, which has been once the property of the United States, has passed, that question must be decided by the laws of the United States; but that whenever, according to those laws, the title shall have passed from the United States to private parties, then that property, like all other property in the State, is subject to State legislation.³ Hence, it must be borne in mind, that from the moment that tracts of land which were once public, which border upon a stream, and are situated within a State or Territory, have come into private ownership of patentees or grantees of the Government, all controversies as to their rights upon the subject as to whether their owners are riparian proprietors or otherwise must be determined and regulated wholly by the laws of the State or Territory in which the land is located, as Congress, after the title has once passed from the Government, has no power to legislate concerning the title of lands and the *incidents thereto* situated within a State.

³ Wilcox v. Jackson, 38 U. S. 13 Pet. 498, 10 L. Ed. 264.

See, also, Hudson Co. W. Co. v. McCarter, 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529, where the Court upheld the legislature of New Jersey

which passed an Act making it unlawful for any person or corporation to conduct any fresh waters of the State into another State for use therein.

PART VI.

THE COMMON LAW GOVERNING WATERS

CHAPTER 21.

THE NATURE OF RIPARIAN RIGHTS.

- § 450. Scope of chapters—Nature and extent of subject treated.
- § 451. Upon what riparian rights are based—The ownership of the bank.
- § 452. The nature of riparian rights—Natural rights.
- § 453. The nature of riparian rights—They are property and a part of the land itself.
- § 454. Nature of riparian rights—As hereditaments.
- § 455. The nature of riparian rights—The riparian owner's property in the water itself is merely usufructuary.
- § 456. The nature of riparian rights—Deprivation of right.

§ 450. **Scope of chapters—Nature and extent of the subject treated.**—It is not the intent of the present work to enter into an extended and detailed discussion of all the common law theories of riparian rights, which a riparian owner may have under that law in the water courses and other bodies of water, and the waters flowing therein. As far as public waters are concerned the rights of the public in and to the use of these waters have already been discussed in Part IV of this work.¹ However, we will go so far into the subject as to show how far the common law is applicable, or rather inapplicable, to the appropriation of the waters of the natural streams for the purposes of irrigation and other beneficial uses in the States of the arid and semi-arid regions of the Western portion of this country. Our discussion will also be largely confined to the rights of the riparian owners in and to those smaller streams of the country, known as private streams, or, in other words,

¹ See Chaps. 15 and 16, inclusive.

those streams and bodies of water which in fact are not actually navigable and therefore public waters.²

§ 451. Upon what riparian rights are based—The ownership of the bank.—The common law rights of riparian proprietors are such as grow out of, or are connected with, their ownership of the banks of the streams and rivers, or other bodies of water. Since these riparian rights depend upon the land contiguous to the water courses, outside of the ownership of the beds of the streams, they are in general use. Certain rights, however, attach to what are known as private streams, which do not attach to public streams.¹ That this is so is significant from the fact that the word "*ripa*," from which our word "riparian" comes, refers to the bank and not to the bed of a stream.² In the strict common law sense, "riparian" means the *ripa* or bank of a stream not navigable,³ although the term is often used to indicate the banks of a large river, lake, or the sea as riparian property.⁴

² For definitions of public and private waters, see Secs. 287-291.

For the right of navigation, see Chap. 16, Secs. 341-357.

For irrigation as a riparian right, see Chap. 26, Secs. 498-525.

For rights as between riparian owners and appropriators, see Secs. 810-823.

¹ For ownership of the beds of public streams, see Secs. 328-332.

For ownership of the beds of private streams, see Secs. 537, 541.

For rights of riparian owners to fish and hunt on public and private waters, see Chap. 17, Secs. 360-365.

² For definition of bank, see Sec. 305; Bouvier, Law Dict., Sub. Ripa; Delaplaine v. Chicago & N. W. R. Co., 42 Wis. 214, 24 Am. Rep. 386; Bathgate v. Irvine, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158.

³ Gough v. Bell, 22 N. J. L. 441, 21 N. J. L. 156.

For the shore, see Sec. 293.

⁴ Bathgate v. Irvine, 126 Cal. 135,

58 Pac. Rep. 442, 77 Am. St. Rep. 158.

See, also, Mobile Transp. Co. v. Mobile, 128 Ala. 335, 30 S. W. Rep. 645, 64 L. R. A. 333, 86 Am. St. Rep. 143; Bardwell v. Ames, 39 Mass. 22 Pick. 333; Potomac Steamboat Co. v. Upper Potomac S. Co., 109 U. S. 672, 27 L. Ed. 1070, 3 Sup. Ct. Rep. 445, 4 Sup. Ct. Rep. 15; French Glenn Live Stock Co. v. Springer, 35 Ore. 312, 58 Pac. Rep. 102, 185 U. S. 47, 46 L. Ed. 800, 22 Sup. Ct. Rep. 563.

The term "riparian proprietor" is used to indicate the owner of the *ripa* or bank bounded upon a water course or lake; Grant v. Hemphill, 92 Iowa 218, 59 N. W. Rep. 263, 60 N. W. Rep. 618; Gough v. Bell, 22 N. J. L. 441, 21 N. J. L. 156.

The words "riparian proprietor" have been carelessly extended from rivers and streams to the shores of the sea. If it is necessary to express the latter by a single adjective, the term "littoral proprietor" is more accurate. Commonwealth v. Roxbury,

Even the ownership of the bed of a stream, by a riparian proprietor, is but one of his riparian rights and grows out of his ownership of the bank. Hence it follows that whether or not a person is the owner of riparian rights depends entirely upon the fact as to whether or not he owns land which is contiguous to and touches upon the water.⁵ The ownership of land only under the water does not give such rights.⁶ "Riparian rights incident or appurtenant to no land can not exist."⁷ And whether the contact with the water be lateral or vertical it is necessary that it should exist.⁸ As was said in an early English case, "The rights of a riparian proprietor, as far as they relate to any natural stream, exist *jure naturae* because his land has, by nature, the advantage of being washed by the streams."⁹ And, in order for an individual or corporation to own riparian rights, they must not only exist originally, by their land touching upon the stream, but they must also continue to exist in the same condition. Any interruption of the owner's land with the contact with the water will deprive him of his riparian rights. Thus the granting of a strip of land next to the water, or the laying out of a road or highway along the water, the title to which is in the public, will deprive the original owner of his riparian rights.¹⁰ But the rule is otherwise if the fee of the highway remains in the abutting owner.¹¹ However, ri-

75 Mass. 9 Gray 451, and note; Boston v. Leeraw, 58 U. S. 17 How. 426, 15 L. Ed. 118; Fitzgerald v. Faunce, 46 N. J. L. 566, 17 Vroom 536.

⁵ Jones v. Johnston, 59 U. S. 18 How. 150, 15 L. Ed. 320; Bates v. Illinois Cent. R. Co., 66 U. S. 1 Black. 204, 17 L. Ed. 158; Clements v. Watkins Land Co., 36 Tex. 339, 82 S. W. Rep. 665; Johnston v. Jones, 1 Black. 209, 17 L. Ed. 117; McCarthy v. Murphy, 119 Wis. 159, 96 N. W. Rep. 531.

⁶ United States v. Morris, 24 Wash. L. Rep. 168; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Weber v. State Harbor Comrs., 85 U. S. 18 Wall. 57, 21 L. Ed. 798; Page v. Mayor, 10 App. Div. 294, 41 N. Y. Supp. 938; Turner v. People's Ferry Co., 22 Blatchf. 272, 21 Fed. Rep. 90.

⁷ Lake Superior Land Co. v. Emerson, 38 Minn. 406, 38 N. W. Rep. 200, 8 Am. St. Rep. 679.

⁸ Miner v. Gilmour, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Reprint 861; Chasemore v. Richards, 7 H. L. Cas. 349, 29 L. J. Exch., N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming *Id.*, 2 Hurlst. & N. 168; Lord v. Commissioners of Sydney, 12 Moore, P. C. C. 473, 14 Eng. Rep. 991.

⁹ Lyon v. Fishmongers' Co., L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

¹⁰ Allen v. Munn, 55 Ill. 486.

¹¹ Brooklyn v. Smith, 104 Ill. 429, 44 Am. Rep. 90.

See, also, Boulo v. New Orleans, M. & T. R. Co., 55 Ala. 480; Chesapeake

riparian rights may vest in a person who is not the owner in fee of the land adjoining the water, but who is entitled to the exclusive possession of the land. Such a person is entitled to all of the riparian rights incident to the land.¹² Riparian rights also attach to lakes and ponds and are not dependent upon the existence of a current to the water. This subject, however, will be discussed hereafter.¹³

In general riparian rights are incident to the ownership of the banks of a stream, or the shores of some other body of water, which the riparian owner possesses exclusively, distinct from the rest of the public, by reason of the fact that his land is so situated that it touches the waters. All the facilities which the location of his land, with reference to the body of water, affords he has the right to enjoy for the purpose of gain or pleasure, and these oftentimes give property thus situated its chief value. It is evident from the nature of the case that these rights of user and of exclusion are connected with the land itself, grow out of the location, and can not be materially abridged or destroyed without inflicting an injury upon the owner which the law should redress. It seems unnecessary to add the remark that these riparian rights are not common to the citizen at large, but exist as incidents to the right of the soil itself adjacent to the water. In other words, according to the uniform doctrine of the best authorities, the foundation of riparian rights, *ex vi termini*, is the ownership of the bank or shore. In such ownership they have their origin. They may and

& O. Can. Co. v. Union Bank, 5, Cranch C. C. 509, Fed. Cas. No. 2654.

See, also, *Furman v. New York*, 5 Sandf. 16, affirmed in 10 N. Y. 567; *People v. New York & S. I. Ferry Co.*, 68 N. Y. 71; *Sage v. New York*, 10 App. Div. 294, 41 N. Y. Supp. 938, affirmed in 154 N. Y. 61, 47 N. E. Rep. 1096, 38 L. R. A. 606, 61 Am. St. Rep. 592. In the facts of this case it appeared that the colonial governor of New York granted to New York City a strip of land around the entire island upon which the city is located, and the Court held that grants of land made by the King of

Great Britain or by persons acting under his authority, before October 14, 1775, were ratified and confirmed by the constitution of 1777.

As to riparian rights on meandered waters, see Secs. 332, 459.

¹² *Hanford v. St. Paul & D. R. Co.*, 43 Minn. 104, 42 N. W. Rep. 596, 44 N. W. Rep. 1144, 7 L. R. A. 722; *Lake Superior Land Co. v. Emerson*, 38 Minn. 406, 38 N. W. Rep. 200, 8 Am. St. Rep. 679.

¹³ See Secs. 474, 475; *Turner v. Holland*, 65 Mich. 453, 33 N. W. Rep. 283.

do exist, though the fee in the bed of the river or lake be in the State. If the proprietor owns the bed of the stream or lake this may possibly give him some additional right; but his riparian rights, strictly speaking, do not depend on the fact.

We find, however, that some of the early authorities hold that riparian rights are not based upon the ownership of the banks, but upon the ownership of the soil under the water. Mr. Angell says that the right of private property in a water course is derived "from, or is embraced by, the ownership of the soil over which it naturally passes."¹⁴ But the better rule and the one which has been almost universally followed in this country, especially in later years, was laid down in *Lyon v. Fishmongers' Co.*,¹⁵ in which Lord Selborne said: "With respect to the ownership of the bed of the river, this can not be the foundation of riparian rights, properly so called, because the word 'riparian' is relative to the banks, and not the bed, of the stream. . . . It is, of course, necessary for the existence of a riparian right that the land should be in contact with the flow of the stream; but lateral contact is as good, *jure naturae*, as vertical."

§ 452. **The nature of riparian rights—Natural rights.**—Under the common law riparian rights are called natural rights, and arise *ex jure naturae*, or from the laws of Nature. They are the rights which the natural position of lands, through or adjoining which a natural stream flows, gives to their owner in and to such water course and to the use of the waters flowing therein. They can only attach to a natural stream which in its natural course flows through the lands to which such rights attach, except under conditions which will be discussed hereafter.¹ As was well stated by the California Court in a recent case, a riparian right "comes from the situation of the land with respect to the water. . . . the natural advantages and benefits resulting from the relative positions, and the presumption that the owner of the land acquired it with a view to the use and enjoyment of these oppor-

¹⁴ Angell on Water Courses, Sec. 5.

See, also, 1 Greenleaf's Ed. Cruise's Digest, 39; *Buckingham v. Smith*, 10 Ohio 288; *Trustees etc. v. Dickinson*, 9 Cush. 544.

¹⁵ L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

¹ For riparian rights to artificial streams, see Sec. 473.

tunities, advantages, and benefits." And, speaking of the relative rights between riparian owners, the Court said: "One has as clear a right as the other to the natural advantages of his situation," etc.² Again, these natural advantages in the form of riparian rights attach not only to streams and water courses, but also to natural lakes and ponds. As was said by Mr. Justice Bradley in rendering the opinion of *Hardin v. Jordan*:³ "As many features of the common law with regard to the rights of riparian owners were borrowed from the civil law,⁴ it would not be strange if the rule relating to lakes and ponds came from the same source. It was recommended by the same reasons that applied to fresh-water rivers and streams. When land is bounded by a lake or pond, the water, equally as in the case of a river, is appurtenant to it; it constitutes one of the advantages of its situation, and a material part of its value, and enters largely into the consideration for acquiring it."⁵

But whether it is upon a natural water course or stream, a lake, or a pond upon which the land touches, whether it be under the old English rule or the more modern American rule, it must be remembered that riparian rights, under the common law, are the natural advantages to the owner of such land, which spring from the natural situation of such land upon such waters.⁶ As was stated in a leading English case upon the subject: "The rights of a

² *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823.

See, also, *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927.

"The right of enjoying this flow without disturbance or interruption by any other proprietor is one *jure naturae*," etc. Washburn on Easements and Servitudes, 4th Ed., p. 316.

For the riparian right to the natural flow of the water, see, also, Secs. 543-547.

³ 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823.

⁴ Citing *Hale, De Jure Maris*, Pt. I, Chap. 6, p. 28.

For the civil law, see, also, Chaps. 29, 30, Secs. 552-569.

⁵ See, also, for riparian rights on lakes and ponds, Secs. 474, 475, 541.

See, also, *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Turner v. Holland*, 65 Mich. 453, 33 N. W. Rep. 283.

⁶ See *Chasemore v. Richards*, 7 H. L. Cas. 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming 2 Hurlst. & N. 168, 11 Eng. Reprint 140; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Shury v. Piggott*, 3 Bulstrode 339, Phopham 169, 79 Eng.

riparian proprietor, so far as they relate to any natural stream, exist *jure naturae* because his land by Nature has the advantage of being washed by streams; and if the facts of Nature constitute the foundation of the right, I am unable to see why the law should not recognize fully the course of Nature in every part of the same stream.”⁷ And in another English case it was stated: “The right to running water has always been properly described as a natural right, just like the right to the air we breathe; they are the gifts of Nature, and no one has the right to appropriate them.”⁸ And in still another English case: “A water course begins *ex jure naturae*, and having taken a certain course, it can not be diverted.”⁹

§ 453. The nature of riparian rights—They are property and a part of the land itself.—“Riparian rights,” according to the strict meaning of the phrase, are such as follow or are connected with the banks of streams or rivers.¹ These rights are a species of property, which belong to the owner of the bank or banks of a stream, and do not depend upon the fact as to whether or not he is the owner of the bed;² neither do they depend at all upon the fact as to whether the owner actually uses any of his rights or not,³ provided he has not lost any of them through grant or prescription.⁴

Reprint 1263, 81 Eng. Reprint 280; Dalton v. Angus, L. R. 6 App. Cas. 740; Backhouse v. Bonomi, 9 H. L. Cas. 513, 11 Eng. Reprint 825; Stockoe v. Singer, 8 El. & Bl. 31; Bealey v. Shaw, 6 East 208, 2 Smith 321, 102 Eng. Reprint 1266; Indianapolis W. Co. v. Baker, 53 Fed. Rep. 970; Lake Superior Land Co. v. Emerson, 38 Minn. 406, 38 N. W. Rep. 200, 8 Am. St. Rep. 679; Merritt v. Parker, 1 Coxe’s Rep. (N. J.) 460.

⁷ Lyon v. Fishmongers’ Co., L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

⁸ Chasemore v. Richards, *supra*.

⁹ Shury v. Piggott, 3 Bulstrode 339, Phopham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280.

¹ Taylor v. Fickas, 64 Ind. 167, 31

Am. Rep. 114; Metcalf v. Nelson, 8 S. D. 87, 65 N. W. Rep. 911, 59 Am. St. Rep. 746.

² Lyon v. Fishmongers’ Co., L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

“The Martin ranch abutted upon the stream and the riparian rights attaching to said lands by reason of this contiguity were paramount to the rights of any appropriator.” Davis v. Martin, 157 Cal. 657, 108 Pac. Rep. 866.

³ Corning v. Troy Iron etc. Co., 40 N. Y. 191, 39 Barb. 311; Vansickle v. Haines, 7 Nev. 249, 15 Morr. Min. Rep. 201.

⁴ For the acquisition of riparian rights by prescription, see Secs. 1039, 1041.

More of these rights attach to what are known as non-navigable or private waters, than attach to navigable or public waters, for the reason that the most of these rights go to the public in public waters.⁵ The riparian rights of persons owning land fronting on navigable waters are defined by the Supreme Court of the United States to be ownership of the beds of the waters, in those States where the local law permits it; exclusive access to the navigable part of the water from the front of his land; and the right to make a landing, wharf, or pier for his own use or for the use of the public, subject to such general rules and regulations as the legislature of the State may see proper to impose for the protection of the rights of the public, whatever those rights may be.⁶

Unlike the rights acquired to the use of water under the Arid Region doctrine of appropriation, riparian rights require no act upon the part of the owner, with the exception of the acquisition of the land adjoining such waters.⁷ These rights, in those jurisdictions where the common law is followed in this respect, are attached to the land itself and are a part and parcel of it. As an incident to such estate they pass by a deed to the land, unless specifically reserved by the grantor. They are not easements or appurtenances to the land, but are "as much a part of the soil as the stones scattered over it."⁸ Or, as stated in still stronger terms by Professor Pomeroy, who contended so strenuously for the application of the law of riparian rights in this Western country, in his work upon that subject: "The use of the stream, and the water flowing through it, forms a part of the rights incident to and involved in the ownership of the lands upon its borders. This is the principle recognized by the common law, and which should be recognized by any auxiliary legislation. It is, moreover, a natural law, an inevitable fact, which no legislation can change. Any statute denying this fact simply attempts an impossibility."⁹ With all due respect for the learning of Professor Pomeroy, his state-

⁵ For definitions of public and private waters, see Secs. 292, 323.

⁶ *Yates v. Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984.

See, also, *Delaplaine v. Chicago & N. W. R. Co.*, 42 Wis. 214, 24 Am. Rep. 386; *North Hempstead v. Gregory*, 66 N. Y. Supp. 28.

See *Public Rights in and to Waters*, Secs. 324-389.

⁷ For the Arid Region doctrine of appropriation, see Chap. 31, Secs. 585-594.

⁸ Angell on Water Courses, Sec. 5.

⁹ Pomeroy on Riparian Rights, Sec. 152.

ments must be taken with the allowance that he argued the question from the strict construction of the common law. As we shall show in this work, legislation has changed these rights and is constantly changing them, as is the case of the recent statutes of Washington and Oregon, limiting these rights;¹⁰ and, in many of the Western States, the common law of riparian rights has been entirely abrogated.¹¹

See, also, *Lux v. Haggin*, 69 Cal. 255, 10 Pac. Rep. 753, wherein it is said: "The right of the riparian proprietor to the flow of the stream is inseparably annexed to the soil, and passes with it, not as an easement or appurtenance, but as a part and parcel of it. Use does not create the right, and disuse can not destroy or suspend it. The right in each extends to the natural and usual flow of all the water, unless where the quantity has been diminished as a consequence of the reasonable application of it by other riparian owners for purposes hereafter to be mentioned. The right of enjoying this flow without disturbance or interruption by any other proprietor is one *jure naturae*, and is an incident of the property in the land, not an appurtenance to it, like the right he has to enjoy the soil itself, in its natural state, unaffected by the tortious acts of a neighboring land owner. It is an inseparable incident to the ownership of the land, made by an inflexible rule of law and absolute and fixed right, and can only be lost by grant or twenty years' adverse possession." *Washburn on Easements and Servitudes*, 4th Ed., pp. 316, 317.

See, also, *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *Penobscot Co. v. Inhabitants of Bradley*, 99 Me. 263, 59 Atl. Rep. 83; *Gardner v. Newburgh*, 2 Johns. Ch. 162, 7 Am. Dec. 526; *Johnson v. Jordan*, 2

Met. 234, 37 Am. Dec. 85; *Ormerod v. Todmorden Joint Stock Mill Co.*, L. R. 11 Q. B. Div. 155, 52 L. J. Q. B. N. S. 445, 31 Week. Rep. 759, 47 J. P. 532; *Union M. & M. Co. v. Dangberg*, 81 Fed. Rep. 73; *Id.*, 2 Sawyer 450, Fed. Cas. No. 14371; *Cary v. Daniels*, 49 Mass. 8 Met. 466, 41 Am Dec. 532; *Hargrave v. Cook*, 108 Cal. 72, 41 Pac. Rep. 18, 30 L. R. A. 390; *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927; *Miller v. Madera etc. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A. N. S. 391; *Anderson v. Bassman*, 140 Fed. Rep. 14; *Southern California etc. Co. v. Wilshire*, 144 Cal. 68, 77 Pac. Rep. 767; *Huffner v. Sawday*, 153 Cal. 86, 94 Pac. Rep. 424; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; *Rianda v. Watsonville etc. Co.*, 152 Cal. 523, 93 Pac. Rep. 79; *Rose v. Mesmer*, 142 Cal. 322, 75 Pac. Rep. 905; *Cline v. Stock*, 71 Neb. 70, 98 N. W. Rep. 454, 102 N. W. Rep. 265; *Shamleffer v. Council etc. Co.*, 18 Kan. 24, 26 Am. Dec. 765; *Verdugo Canyon W. Co. v. Verdugo*, 152 Cal. 655, 93 Pac. Rep. 1021; *Northern California etc. Co. v. Stacher*, 13 Cal. App. 404, 109 Pac. Rep. 896; *Dalton v. Bowker*, 8 Nev. 190; *Elliott v. Fitchburg R. Co.*, 10 Cush. (Mass.) 191, 57 Am. Dec. 85.

¹⁰ For which see Part XIV.

¹¹ See Secs. 588-594.

Riparian rights are generally regarded as property and of value, of which the riparian owner can not be deprived at all for the private use of another, nor for public use, except by due process of law,¹² and without receiving just compensation.¹³ The common law of riparian rights may be abolished either by a constitutional provision or by a legislative enactment.¹⁴ But such a provision can not have the effect of abolishing those rights which had already vested at the time of its adoption.¹⁵

.. § 454. **Nature of riparian rights—As hereditaments.**—There has been considerable discussion as to whether a riparian right

¹² See Eminent Domain, Secs. 1059-1098.

¹³ As was said by Mr. Justice Miller in delivering the opinion of the Court in *Yates v. City of Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984, "This riparian right is property and is valuable, and, though it must be enjoyed in due subjection to the rights of the public, it can not be arbitrarily or capriciously destroyed or impaired. It is a right of which, when once vested, the owner can only be deprived in accordance with established law, and if necessary that it be taken for the public good, upon due compensation."

See, also, *Morrill v. St. Anthony Falls Water Power Co.*, 26 Minn. 222, 2 N. W. Rep. 842, 37 Am. Rep. 399; *Hollingsworth v. Tensas*, 17 Fed. Rep. 109, 4 Woods 280; *Miller v. Mendenhall*, 43 Minn. 95, 44 N. W. Rep. 1141, 8 L. R. A. 89, 19 Am. St. Rep. 219; *Hanford v. St. Paul & D. R. Co.*, 43 Minn. 104, 42 N. W. Rep. 596, 44 N. W. Rep. 1144, 7 L. R. A. 722; *Keyport & M. P. S. B. Co. v. Farmers' Transp. Co.*, 18 N. J. Eq. 13, affirmed in 18 N. J. Eq. 511; *Brisbine v. St. Paul & S. C. R. Co.*, 23 Minn. 114; *Carli v. Stillwater St. R. & Trans. Co.*, 28 Minn. 373, 10 N. W. Rep. 205, 41 Am. St. Rep. 290; *Union Depot St. R. & Trans. Co. v. Brunswick*, 31

Minn. 297, 17 N. W. Rep. 626, 47 Am. Rep. 789; *Clement v. Burns*, 43 N. H. 609; *Green Bay & M. Canal Co. (Pat-ten Paper Co. Ltd.) v. Kaukauna Water Power Co.*, 90 Wis. 370, 61 N. W. Rep. 1121, 63 N. W. Rep. 1019, 28 L. R. A. 443, 48 Am. St. Rep. 937; *Id.*, 93 Wis. 283, 66 N. W. Rep. 601, 67 N. W. Rep. 432; *Fuller v. Shedd*, 161 Ill. 462, 44 N. E. Rep. 286, 33 L. R. A. 146, 52 Am. St. Rep. 380; *Parker v. West Coast Packing Co.*, 17 Ore. 510, 21 Pac. Rep. 822, 5 L. R. A. 61; *Sullivan Timber Co. v. Mobile*, 110 Fed. Rep. 187; *Concord Mfg. Co. v. Robertson*, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679; *Lake Superior Land Co. v. Emerson*, 38 Minn. 406, 38 N. W. Rep. 200, 8 Am. St. Rep. 679; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

¹⁴ See Secs. 588-594.

For the dedication of waters by a State to the State or public, see Secs. 372-389.

¹⁵ *Clark v. Cambridge & A. Irr. & Imp. Co.*, 45 Neb. 798, 64 N. W. Rep. 239; *Crawford Co. v. Hall*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Biglow v. Draper*, 6 N. D. 152, 69 N. W. Rep. 570; *Benton v. Johncox*, 17 Wash. 277, 49 Pac. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912.

was a corporeal or incorporeal hereditament. Mr. Angell says: "The right of property in a water course is derived, as a corporeal hereditament, from, or is embraced by, the ownership of the soil over which it naturally passes."¹ In the first place, this is not the generally accepted doctrine upon the subject of the right of property in water courses, or riparian rights as they are commonly termed. These rights, as we have discussed in previous sections, do not spring from the ownership of the soil under the water, but the ownership of the banks or sides of the water course or stream.² However, it may follow that by the ownership of the bank or side of a stream one of the riparian rights which attach to the land is the title to the soil over which the water flows.³ This soil is land, and consists of a substantial, tangible, and permanent object. And, therefore, as to this particular riparian right, it must be held to be a corporeal hereditament. But, upon the other hand, those riparian rights, which are simply usufructuary in their nature and are without any substantial, tangible body, but are intangible in substance, are incorporeal hereditaments appertaining to the freehold. Such, for example, would be the right to the use of the water of the stream or the right of fishery.⁴ This was the holding of the New York Court, where the owner of certain lands had the right to the use of the waters of a pond adjoining. The riparian right to the use of the water was held to be incorporeal and an appurtenance to the land, and hence should be taxed as a part of it in the town where the land lay.⁵

§ 455. The nature of riparian rights—The riparian owner's property in the water itself is merely usufructuary.—One of the most important rights which a landowner has by virtue of his riparian ownership is the right to the use of the water as it flows

¹ Angell on Water Courses, 7th Ed., Sec. 5.

² Upon what riparian rights are based, see Secs. 451, 452.

³ For the ownership of the beds of navigable streams, see Secs. 328-332.

For the ownership of the beds of private streams, see Secs. 330-332.

⁴ Washburn on Easements, 307; Swift v. Goodrich, 70 Cal. 103, 11 Pac.

49—Vol. I—Kin. on Irr.

Rep. 561; Slack v. Walcott, 3 Mason 508, Fed. Cas. No. 12,932; Shury v. Piggott, 3 Bulstrode 339, Phopham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280; *In re Hall*, 116 App. Div. 729, 102 N. Y. Supp. 5; St. Helena Water Co. v. Forbes, 62 Cal. 182, 45 Am. Dec. 659.

⁵ *In re Hall*, 116 App. Div. 729, 102 N. Y. Supp. 5.

by his land. Although this is a property right, accorded to him by virtue of the natural position of his land upon the stream, as in the case of public waters,¹ this property right is in its nature usufructuary. A riparian owner has no absolute title to the water itself of a stream as it flows by his land. He may, however, have the right to apply it to certain uses. As Blackstone tersely says: "For water is a movable, wandering thing, and must of necessity continue common by the law of Nature; so that I can only have a temporary, transient, usufructuary property therein; wherefore, if a body of water runs out of my pond into another man's, I have no right to reclaim it. But the land which that water covers is permanent, fixed, and immovable, and, therefore, in this I may have a certain substantial property, of which the law will take notice, and not of the other."²

All the riparian owners, through or by the side of whose land a stream naturally flows, may enjoy the privilege of using it. Hence it follows that rights, which are enjoyed by an indefinite number of persons, cannot be absolute as to any particular right, but must be relative or correlative as to all the owners on the stream.³ The rights of all riparian proprietors upon a stream are equal; there-

¹ See Secs. 287-291.

² 2 Blackstone Com. 18.

For the riparian owner's right to use the water, see Secs. 483-497.

For irrigation as a riparian right, see Chap. 26, Secs. 498-525.

That the right of a riparian owner to the water is merely usufructuary, see *Hargrave v. Cook*, 108 Cal. 72, 41 Pac. Rep. 18, 30 L. R. A. 390, wherein it is said: "The right of a riparian proprietor in or to the waters of a stream flowing through or along his land is not the right of ownership in or to those waters, but is a usufructuary right, a right amongst others, to make a reasonable use of a reasonable quantity for irrigation, returning the surplus to the channel, that it may flow on in the accustomed mode to lands below. If his needs do not prompt him to make any use of them, he still has the right to have them flow

on to and along and over his land in their usual way, excepting as the accustomed flow may be changed by the act of God, or as the amount of it may be decreased by the reasonable use of upper owners and riparian proprietors."

In *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674, it is said: "As to the nature of the riparian owner in the water, by all modern as well as ancient authorities, the right in the water is usufructuary, and consists not so much in the fluid itself as in its uses."

See, also, *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312.

See, also, cases cited below.

³ *Merrifield v. Worcester*, 110 Mass. 216, 14 Am. Rep. 592; *Lyon v. Fishmongers' Co.*, L. R. 1 App. Cas. 681, 10 Ch. 679, 44 L. J. Ch., N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

fore, one proprietor, though he has the undoubted right to use the waters of a stream for the purpose of generating power as it passes his land, yet he must so use it as to do no injury to any other proprietor.⁴ In fact, the water must be so used by any one that no injury will result to the other owners or to any one of the other owners.⁵ This is the necessary result of the perfect equality of right among all of the proprietors. Thus each proprietor upon a stream may insist that its waters shall flow to his land in the usual quantity, in its natural channel, and that it shall flow off his land to his neighbor below, in its accustomed place and at its usual level.⁶ The riparian owners also have some duty to the public. While the rights of the riparian owners can not be destroyed by the public without just compensation, they are always subordinate to the public rights, and the State has the power to regulate their exercise in the interest of the public. A riparian owner can not change the natural conditions of the stream where it interferes with the public rights, any more than he can where the interference is to the rights of the other riparian owners.⁷

As against the rights of other owners or those of the public, the right of one riparian owner to the use of the waters of a stream flowing by or through his land has been compared to the right which he has in the fish swimming therein. He has no title to them until they have been captured and reduced to his possession. So, too, he has no title to the water while it remains flowing in the stream. And, as to both the right to the use of the water and the right to take the fish swimming therein, it is within the police powers of the State to regulate.⁸ As was well stated by the New Hampshire Court, in a leading case upon the subject: "This right in the owner of the land must be regarded as qualified to a certain extent by the universal principle that all property is

⁴ For appropriation of water for power purposes, see Secs. 847-855.

⁵ 2 Hen. IV, 11 B, 22 Hen. VI, 14 Rol. Abr. 107; *Tylér v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312.

⁶ For right to natural flow of water, see Secs. 543-547, 549.

⁷ *Sage v. New York City*, 154 N. Y. 61, 47 N. E. Rep. 1096, 38 L. R. A. 606, 61 Am. St. Rep. 592, affirming 10 App. Div. 294, 41 N. Y. Supp. 938;

Miller v. Mendenhall, 43 Minn. 95, 44 N. W. Rep. 1141, 8 L. R. A. 89, 19 Am. St. Rep. 219.

See, for rights of public in waters, Chap. 15, Secs. 324-340.

⁸ For the power to regulate the right of fishery, see Secs. 369, 370.

For the power of a State to regulate the use of water, see Secs. 593, 1338-1341.

held subject to those general regulations which are necessary to the common good and general welfare, and to that extent it is subject to legislative control. It is a well established principle that every person shall so use and enjoy his own property, however absolute and unqualified his title, that the use of it shall not be injurious to the equal enjoyment of others having the equal right to the enjoyment of their property, nor injurious to the rights of the public.”⁹ Also the California Court, in deciding the validity of a statute prohibiting the destruction of fish, held to the same effect and said: “Even, therefore, if, as contended by the defendant, the lands through which the stream flows are to be presumed, in the absence of contrary averment, to be owned in private ownership, it can make no difference as to the right here asserted. While the right of fishery upon his own land is exclusively in the riparian proprietor, this does not imply or carry the right to destroy what he does not take. He does not own the fish in the stream. His right of property attaches only to those he reduces to actual possession, and he can not lawfully kill or obstruct the free passage of those not taken.”¹⁰ So, also, it may be said regarding the rights in and to the waters of a stream of one riparian proprietor, he has no ownership in the waters as they flow by his land. He has but the right to their use. And he must so use them that his use will not injure the equal rights of other riparian proprietors upon the same stream, or the rights of the public.¹¹

In an early California case, holding that the Government was a riparian owner in the streams flowing over the public lands, it was said: “It is contended that the principle embodied in the instruction is in direct conflict with this doctrine, and that it can only be maintained upon the theory of a private ownership in the water itself. This position is clearly untenable. If the Government, which in this instance is the riparian proprietor, had granted to the defendants the right to divert from the creek a given quantity of water, without restriction as to the place of diversion, it

⁹ State v. Roberts, 59 N. H. 256, 47 Am. Rep. 199.

¹⁰ People v. Truckee Lumber Co., 116 Cal. 397, 48 Pac. Rep. 374, 39 L. R. A. 581, 58 Am. St. Rep. 183.

For the right of fishing and hunting, see Chap. 17, Secs. 358-371.

¹¹ For the rights of the public in water and water courses, see Part IV, Chaps. 15-18.

is clear that the right could be exercised at any point on the stream, though the effect of the grant would not have been to convey any property in the *corpus* of the water, for no such property is vested in the Government.”¹²

§ 456. The nature of riparian rights—Deprivation of right.—From the principles discussed in the last sections of this chapter,¹ it may be seen that the right of a riparian owner in and to the water course and the use of the water flowing therein spring from the natural situation of such land upon such stream;² that it is a species of property and a part and parcel of the land itself;³ that as far as the use of the water is concerned it is incorporeal in its nature;⁴ and that he does not own the water flowing by his land, but simply has the right to its reasonable use.⁵ These property rights are a part and parcel of the freehold of which no man, in whom the title to the same has vested, can be disseized but by a lawful judgment of his peers, by due process of law, and upon just compensation.⁶ Still no action will lie to recover the possession of a water course, by that name, or for the recovery of the water itself, as for so many cubical yards or for so many acres of water; but, as Blackstone states, the action must be brought for so many acres of land covered by water.⁷ Neither can an appropriator sue for the value of water at so much per inch or gallon wrongfully diverted from the stream above him by another; he must sue for the damage to his enterprise from loss of the use and flow.⁸

¹² Kidd v. Laird, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571.

¹ See Secs. 451-455.

² See Secs. 451, 452.

³ See Sec. 453.

⁴ See Sec. 454.

⁵ See Sec. 455.

See, also, Secs. 288, 289.

⁶ For the taking of riparian rights by the power of eminent domain, see Secs. 1088-1091.

For the sale and conveyance of riparian rights, see Secs. 526-535.

See, also, Gardner v. Newburg, 2

Johns. Ch. 162, 7 Am. Dec. 526, where it was held that, although the legislature has power to take private property of this kind for useful and necessary purposes, it is bound to provide for fair compensation to the individual whose property is taken, and until a just indemnity is afforded, the power can not be legally exercised.

See, also, Beidelman v. Foulk, 5 Watts. 308 (Pa.).

⁷ 2 Blackstone Com. 18; Runnington on Eject. 131.

⁸ See Remedies, Chaps. 78-83.

CHAPTER 22.

UPON WHAT LANDS RIPARIAN RIGHTS ATTACH.

§ 457. Scope of chapter.

§ 458. What are riparian lands—Extent—Side toward the stream.

§ 459. Riparian rights on meandered waters.

§ 460. What are riparian lands—How far from the stream such land may extend.

§ 461. Extent of riparian lands—The land must be under one ownership.

§ 462. Extent of riparian lands—All lands must lie within the same watershed.

§ 463. Extent of riparian lands—Lands claimed as riparian must be reasonable in extent.

§ 464. Extent of riparian lands—Rules based upon the sources of titles.

§ 465. Extent of riparian lands—Rule that all lands in common ownership at time of claim are riparian.

§ 466. The character of lands to which rights attach.

§ 457. **Scope of chapter.**—As we have discussed in previous sections of this work, lands, in order to be riparian, must border or touch upon the waters of a stream or other body of water; or, in other words, the riparian owner must own the banks of the stream in order for his lands to be riparian.¹ And, in the preceding chapter, having discussed the nature of the common law of riparian rights,² in the present chapter we will further discuss the subject as to what are riparian lands and their extent, or to what lands riparian rights attach.³

§ 458. **What are riparian lands—Extent—Side toward the stream.**—As we have stated before, riparian lands are those only which border or touch upon the waters of a stream, or other natural bodies of water.¹ They must include the *ripa* or bank of the water course or stream, or other body, and come down to the very edge of the water itself.² According to the laws of the State where the question arises, riparian lands may or may not include the soil under the water. If it does include this soil, it is only as one of the riparian rights which attach to the land by virtue of

¹ See Secs. 451, 452.

¹ See Secs. 451, 452.

² See Chap. 21, Secs. 450-456.

² For the essential elements of a water course, see Secs. 301-307.

³ See Secs. 458-466.

the ownership of the bank.³ It must be remembered that riparian rights in no way depend upon the ownership of the soil over which the water flows, *but upon the bank or banks down to the very edge of the water itself*. Upon this subject a leading English case held that rights attached to riparian ownership depend solely upon the lateral contact of the land with the water, and not upon the ownership of the soil under the water. And, as to the lateral contact of the land with the water the Court assumed that, in England at least, it was the settled law that it must exist, by saying: "It is, *of course*, necessary to the existence of a riparian right that *the land should be in contact with the flow of the stream*."⁴ Again, as was held by the Supreme Court of Florida in an early case: "In order for one to have riparian rights there must be an actual water boundary of the land in connection with which such rights are claimed."⁵ Laterally, or up and down the stream, the riparian lands of any owner extend as far as his lands extend.

³ For the ownership of the beds of public waters, see Secs. 325-333.

For the ownership of the beds of private waters, see Secs. 535, 541, 542.

⁴ *Lyon v. Fishmongers' Co.*, L. R. 1 App. Cas. 682, opinion of Lord Selborne.

See, also, for riparian right of access to the stream, Secs. 335, 336.

⁵ *Sullivan v. Moreno*, 19 Fla. 200.

See, also, *Axline v. Shaw*, 35 Fla. 305, 17 So. Rep. 411, 28 L. R. A. 391, wherein it is said: "There is a manifest difference between land bounded by the lake itself, and bounded by the shore of the lake. Bounded by navigable water, the lake, or stream, the law extends the boundary to the edge of the channel. If bounded by the shore or bank, the land does not reach the water, but is limited to the upland." *Clement v. Burns*, 43 N. H. 609; *Nickerson v. Crawford*, 16 Me. 245; *Chapman v. Edmands*, 3 Allen 512 (Mass.); *Niles v. Patch*, 13 Gray 254; *Buchanan v. Ingersoll etc. Co.*,

30 Ont. Rep. 456; *Stockport Waterworks Co. v. Potter*, 7 Hurlst. & N. 160, 31 L. J. Exch. N. S. 9, 7 Jur. N. S. 880; *Id.*, 3 Hurlst. & C. 300, 10 Jur. N. S. 1005, 10 L. T. N. S. 748; *Ventura L. & P. Co. v. Meiners*, 136 Cal. 284, 68 Pac. Rep. 818, 89 Am. St. Rep. 128; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674, where it was held that swamp land through which there was a current of water was not riparian land, and in order to be such there must be a bank touching upon the water, and that the beds of streams were not riparian lands.

Where a boundary is limited "to the bank of the stream," it necessarily excludes the stream itself. *Hatch v. Dwight*, 17 Mass. 289, 10 Am. Dec. 145; *Daniels v. Cheshire R. Co.*, 20 N. H. 85.

"But it is clear that, if the whole tract owned by the defendants is riparian land, this is so because the stream crosses the tract at a point in

The facts that land which forms a part of a wide bottom extending between higher lands or bluffs on each side, that the course of the river channel is subject to changes by unusual floods, and that the land is all underlaid by an underground flow, in contact with and forming a part of the surface stream, are held not to make the land nonriparian.⁶ Again, the altitude of the land above the water, which makes it impossible to use the water thereon, except by means of pumps, does not make the land nonriparian.⁷ It therefore follows that, as contact with the water is absolutely necessary to the existence of riparian land, if any supervening right is interposed, so as to cut off this contact, lands which were formerly riparian cease to be such, and the riparian rights attach themselves only to the supervening right.⁸ Such, for example, would be the sale of a strip of land along the water's edge. Likewise, it is the rule that any land which formerly belonged to a riparian tract, and which is cut off by sale from the portion abutting upon the water, loses its riparian rights.⁹ There is, however,

the extreme southeast corner thereof. The stream does not touch the defendants' land at any other point. The tract is therefore riparian to the stream at that point only. The mere fact that a tract of land touches a stream at one point does not make such land riparian at other points on the stream, or to the whole of the stream. The riparian right of such land, or the owners thereof, is confined to the points where the land abuts upon the stream." *Miller v. Baker*, — Wash. —, 122 Pac. Rep. 604.

⁶ *Anaheim Union Water Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062, where it is said: "We are of the opinion that land thus situated is not to be distinguished from other land abutting on the stream, so far as the right of the owner to the reasonable use of the water is concerned. We know of no principle of riparian right that would except such land from its benefits, nor from any decision to that effect.

See, also, *Ventura etc. Co. v. Meiners*, 136 Cal. 284, 68 Pac. Rep. 818, 89 Am. St. Rep. 128, holding that land may be riparian to a stream, although it does not abut thereon except when the stream is swollen by floods.

⁷ *Charnock v. Higuerra*, 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195, the Court saying: "But it must necessarily be true, from the very nature of the right, that in no case can one proprietor be deprived of this just and equal proportion merely because his land, by reason of its altitude or level above the stream can not be irrigated by the same method employed on some other land."

See, also, for what lands may be irrigated as a riparian right, Secs. 514-516.

⁸ See, also, for the side toward the land, Secs. 460-466.

⁹ For extent of land which may be considered riparian back from the stream, see Secs. 463-465.

one exception to the above rule, and that is in the States where levees are constructed by the public along the rivers to retain the waters in their channels. These being improvements upon the water courses arising from the necessities of the case, it is held that the lands which touch upon the levees are riparian lands to the river, and that, too, whether the title to the levee is in the State or public, or whether the public simply has an easement over it.¹⁰

§ 459. **Riparian rights on meandered waters.**—As we have said in previous sections, when the Government sells a tract of land within a State, bordering upon a meandered navigable stream, or other body of water, it has then parted with all the title to the lands down to and including the bed of the water. The bed of the stream or water vested in the State upon its admission to the Union; the upland, down to the high-water line, within the boundaries of the grant, passed to the grantee, as far as the Government was concerned, and even to the thread of the stream if the rule of the State so provided.¹ The title to the beds of public streams and other bodies of water has been sufficiently discussed, together with the rules adopted in the different States.² There is, however, one subject which we will touch on here, and that is, as to who is the owner of the land between the meandered line of a stream or body of water and the high-water line of the water itself. It has often happened, through various causes, that there is a strip of land between the meander line and the high-water mark, and this strip is neither the bed of the stream, nor included within the land described in the patent from the Government. This proposition has led to a great deal of discussion in the Courts as to whom this strip belonged—the United States, the State, or the grantee from the Government. The Government can not claim it, as it had granted all of its title, even including the bed of

For the right to irrigate riparian land, see, also, Secs. 514-516.

¹⁰ Henderson v. Mayor of New Orleans, 3 La. Ann. 563; Bass v. State, 34 La. Ann. 494; Hart v. Board of Levee Commissioners, 54 Fed. Rep. 559.

¹ For title to beds of streams upon admission, see Secs. 329-332.

For meandered bodies of water, rights of public in, see Sec. 332.

For ownership of beds of streams and other bodies of water, see Secs. 325-332, 537, 541, 542.

² See sections cited, *supra*.

the stream, provided, of course, the land lies within a State.³ If, however, the land is in a Territory, the United States still retains the title to the beds of the streams. The title to this strip, then, lies between the State and the grantee of the Government. And upon this question the rule is well settled that the meander line is not to be treated as the boundary line of the land granted, but is to be treated as simply a line run to show the sinuosities of the stream or other body of water,⁴ and that the body of the water is the true line of the land granted by the Government.⁵

This rule is based upon the oftentimes fiction that the meander line as shown upon the plats of the Government survey conforms strictly to the high-water line of the stream as it actually exists. And the Courts take the generous position that the Government, having represented to the settler by its surveys and plats that the high-water line and the meander line were identical, and that in purchasing the land the settler was led to believe that he was

³ See Secs. 331, 332.

⁴ *St. Paul & P. R. Co. v. Schurmeir*, 74 U. S. 7 Wall. 272, 19 L. Ed. 74; 10 Minn. 82, 88 Am. Dec. 59.

⁵ See Sec. 332; *Jefferis v. East Omaha Land Co.*, 134 U. S. 178, 33 L. Ed. 872, 10 Sup. Ct. Rep. 518, where the Court held that meander lines are run in surveying public lands bordering upon navigable streams, not as boundaries of the tract, but to ascertain the quality of the land subject to sale; and the water course, and not the meander line, as actually run on the land, is the true boundary of the land.

See, also, *Mitchell v. Smale*, 140 U. S. 406, 35 L. Ed. 442, 11 Sup. Ct. Rep. 819; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823; *Stoner v. Rice*, 121 Ind. 51, 22 N. E. Rep. 968, 6 L. R. A. 387; *Poynter v. Chipman*, 8 Utah 442, 32 Pac. Rep. 690; *Knudsen v. Omanson*, 10 Utah 124, 37 Pac. Rep. 250; *Maynard v. Puget Sound Nat. Bank*, 24 Wash. 455, 64 Pac. Rep. 754; *Lamprey v.*

State, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541, where the Court said: "The owners of banks bordering on them have often bought with reference to access to the water, which usually constitutes an important element in the value and desirability of the land." If the rule were otherwise, "it would simply open the doors for prowling speculators to step in and acquire title from the State to any relictions produced in the course of time by the recession of the water, and thus deprive the owner of the original shore estate of all riparian rights, including that of access to the water."

See, also, *Tolleston Club v. State*, 141 Ind. 197, 38 N. E. Rep. 214, 40 N. E. Rep. 690; *Sizor v. Loganport*, 151 Ind. 626, 50 N. E. Rep. 377, 44 L. R. A. 814; *Fuller v. Dauphin*, 124 Ill. 542, 16 N. E. Rep. 917, 7 Am. St. Rep. 388; *Kraut v. Crawford*, 18 Iowa 549, 87 Am. Dec. 414; *Provins v. Levi*, 6 Okla. 941, 50 Pac. Rep. 81; *Johnson v. Tomlinson*, 41 Ore. 198, 68 Pac. Rep. 406.

purchasing water frontage, with all the rights thereunto appertaining, did actually purchase to the high-water line, although there might be a considerable strip of land between the meander line and the high-water line, not included in the acreage sold, or paid for by the settler.⁶ So a settler purchasing land upon a navigable stream, or other body of water, from the Government, receives a title at least to the high-water line, and, in some States, further than this line and to the center of the stream, if the law of the State permits it,⁷ even if in so doing this includes more land than is included within the survey of the tract, and more than the settler pays the Government for, provided that the land included in the strip between the meander line and the natural boundary of the stream is much smaller in proportion than the land granted, and to such lands all riparian rights attach, which are allowed by the laws of the State wherein the land is situated.⁸ Where, however, the land in the strip is much larger than the land granted, and it was the evident intent of the Government to limit the land with the meander line, or in case where there was gross fraud or mistake, then the land is limited with the meander line.⁹ So, the settled rule is, that if the United States has disposed of lands bordering upon a meandered non-navigable water course or lake by a patent containing no reserva-

⁶ *Schlosser v. Cruickshank*, 96 Iowa 414, 65 N. W. Rep. 344; *Kirwin v. Murphy*, 103 Fed. Rep. 104, 83 Fed. Rep. 275 28 C. C. A. 348, 49 U. S. App. 658, App. Dis. 170 U. S. 205, 18 Sup. Ct. 592, 42 L. Ed. 1009; *Heald v. Yumisko*, 7 N. D. 422, 75 N. W. Rep. 806.

⁷ *Illinois & M. Canal v. Haven*, 10 Ill. 548, *Middleton v. Prichard*, 4 Ill. 510, 38 Am. Dec. 112; *Jones v. Pettibone*, 2 Wis. 308; *McBride v. Whitaker*, 65 Neb. 137, 90 N. W. Rep. 966, affirmed 197 U. S. 510, 49 L. Ed. 857, 25 Sup. Ct. Rep. 530; *Johnson v. Johnson*, 14 Idaho 561; 95 Pac. Rep. 499, 24 L. R. A., N. S. 1240.

⁸ For the States abolishing riparian rights, see Secs. 507, 621.

⁹ *Fuller v. Shedd*, 161 Ill. 462,

44 N. E. Rep. 286, 33 L. R. A. 146, 52 Am. St. Rep. 380; *Grant v. Hemp-hill*, 92 Iowa 218, 59 N. W. Rep. 263, 60 N. W. Rep. 618; *Glenn v. Jeffrey*, 75 Iowa 20, 39 N. W. Rep. 160; *Barnhart v. Ehrhart*, 33 Ore. 274, 54 Pac. Rep. 195; *Little v. Pherson*, 35 Ore. 51, 56 Pac. Rep. 807; *Lammers v. Nissen*, 4 Neb. 245, affirmed 154 U. S. 650, Appendix, 14 Sup. Ct. Rep. 1189, 25 L. Ed. 562; *Bissell v. Fletcher*, 19 Neb. 725, 28 N. W. Rep. 303; *Boynton v. Miller*, 22 Iowa 579; *Johnson v. Knott*, 13 Ore. 308, 10 Pac. Rep. 418; *Niles v. Cedar Point Club*, 85 Fed. Rep. 45, 29 C. C. A. 5, 54 U. S. App. 668; *Smith v. Miller*, 105 Iowa 688, 70 N. W. Rep. 123, 75 N. W. Rep. 499.

tions, and there is nothing else indicating an intention to withhold title to the lands within the meander lines, the Government has nothing left to convey, and whether the title to the bed of the waters is in the State or passes to the grantee is determined by the local law of the State wherein the land lies.¹⁰

§ 460. **What are riparian lands—How far from the stream such land may extend.**—Upon the question as to how far back from a certain stream, or other body of water, lands may extend and still retain their riparian character, there are certain propositions that are well settled and others concerning which there is a conflict of authority. In general it may be said that the rules are fixed by the law of the particular State where the rights are claimed, it being within the jurisdiction of the Courts of that State to settle and determine any such disputed question, and it also being within the powers of the legislature of such State to limit the extent of riparian rights within the State or to abolish them entirely.¹ Those that are settled and upon which it may be said that the authorities agree are: First, the land at the time the riparian rights are claimed must be held in common ownership;² second, that all riparian lands to a certain stream must lie within the watershed of that stream;³ third, if the use for which the water is claimed consumes the water, the extent of land must be reasonable with reference to the lands of other proprietors whose lands are also riparian to the same stream.⁴

The proposition upon which there is the most conflict of authority is whether or not at the time of the claim for the use of the water is made, the land in question was acquired at one time, or by one entry, or whether the land is an accumulation of various tracts, one of which only touches upon the stream, and which tracts were acquired at different times and through different sources of title by the then owner. These propositions will be discussed in the following sections, in the order named.⁵

¹⁰ Harrison v. Fite, 148 Fed. Rep. 781, 78 C. C. A. 447; Niles v. Cedar Point Club, 175 U. S. 300, 44 L. Ed. 171, 20 Sup. Ct. Rep. 124; Lamprey v. State, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541.

¹ For the abolition of riparian rights, see Secs. 585-594.

² See Sec. 461.

³ See Sec. 462.

⁴ See Sec. 463.

⁵ See Secs. 461-463.

§ 461. **Extent of riparian lands**—The land must be under one ownership.—One of the propositions which is well settled by all of the authorities as to the extent of riparian lands back from the water front is that, at the time of the claim to riparian rights, the lands, in order to be riparian, must be under one or a common ownership. They must all be owned by the same individual, corporation, or company; and that, too, regardless of the source or different sources of the title to such lands.¹ Therefore, if the riparian lands are segregated at right angles with the stream, or from the stream back to its outermost boundary at any angle, so that each portion still retains a frontage or access upon the stream, each portion takes its proportion of all of the riparian rights which were formerly attached to the whole tract, and which are allowed under the laws of the State where the land is located, unless there should be some specific reservation made in the deed of conveyance.² In this case none of the lands lose any of their riparian rights.

But, upon the other hand, as riparian rights grow out of the fact of the ownership of the bank of the stream, or that of some other natural body of water, and that the land has a direct access to the water itself, any lands which are back from the stream, the title to which is in one other than the riparian owner and do not have this access, although they may directly adjoin, and be in the same watershed with the lands which are actually riparian, are not themselves riparian.³ It therefore follows that if riparian lands are segregated parallel with the stream, or if any portion is sold which does not have a frontage or direct access to the water,

¹ For lands acquired under different sources of title, see Sec. 464.

² For the conveyance of riparian rights, see Secs. 526-536.

³ That riparian lands depend upon the natural situation upon the stream, see Secs. 451, 452.

That lands in order to be riparian to a certain stream must be within the same watershed, see Sec. 462.

Riparian lands are dependent upon the ownership of land which is contiguous to and borders upon the water, and they do not attach to any lands,

however near, which do not extend to the water. *Ketchikan Co. v. Citizens' Co.*, 2 Alaska 120; *Stockport Waterworks Co. v. Potter*, 3 Hurlst & C. 300, 10 Jur. N. S. 1005, 10 L. T. N. S. 748, affirmed in 7 Hurlst. & N. 160, 31 L. J. Exch. N. S. 9, 7 Jur. N. S. 880; *Omerod v. Todmorden Stock Mill Co.*, L. R. 11 Q. B. Div. 155, 52 L. J. Q. B. N. S. 445, 31 Week. Rep. 759, 47 J. P. 532; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

that portion so segregated loses all of its riparian rights, and the portion retaining the frontage retains all of such rights, at least during the period of such segregation. As stated by the Supreme Court of California upon the subject: "If the owner of a tract abutting on a stream conveys to another a part of the land not contiguous to the stream, he thereby cuts off the part so conveyed from all participation in the use of the stream and from riparian rights therein, unless the conveyance declares the contrary."⁴ And in a leading English case upon the subject it was held that the rights of a riparian proprietor can not be transferred to one who is not a riparian proprietor without transferring some of his land abutting on the river, as the riparian rights are entirely derived from his possession of the land abutting on a river.⁵ As to whether or not such lands so cut off from access to the stream may recover their riparian rights by a repurchase by the owner of the lands actually riparian is a disputed question, and the rule is different in the different States, and will be discussed later.⁶

§ 462. Extent of riparian lands—All lands must lie within the same watershed.—As has been stated before, riparian rights attach to lands from the natural situation of such lands upon the water.¹ They must also be held by one or a common ownership.² However, if lands held in common ownership and bordering upon a certain stream are divided by Nature, so that a portion of them

⁴ *Anaheim Union W. Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062. "The severance, under such circumstances, would cut off such tract from the riparian right." *Hudson v. Dailey*, 156 Cal. 617, 105 Pac. Rep. 748.

⁵ *Stockport Waterworks Co. v. Potter*, *supra*. The decision in this case was also followed and approved in *Ormerod v. Todmorden Joint Stock Mill Co.*, *supra*; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217.

Where a tract of land not contiguous to the stream is severed from the main tract bordering on the stream, the fact that it was a part of a ranch to which riparian rights extended while the ownership was continuous from it to the banks of a stream would not preserve such right to the severed tract. "The severance under such circumstances would cut off such tract from the riparian right." *Hudson v. Dailey*, 156 Cal. 617, 105 Pac. Rep. 748.

⁶ See Secs. 464, 465.

¹ See Secs. 451, 452.

² See Sec. 461.

are cut off and lie in another watershed, such lands are not riparian to such stream. They belong to the lands of the other watershed, and, in turn, may or may not be riparian to the stream which drains such watershed, depending, of course, as to whether or not they touch upon such stream. In such a case Nature has interposed a dividing line, and has cut off such lands from the lands actually riparian to the first stream by the ridge dividing the two watersheds. This is just as effectual as though the common owner had cut off such lands by conveying them to another person.³ As is said by Mr. Farnham:⁴ "But the fact that the land is beyond the watershed of the stream must, of necessity, prevent its being riparian. All conceptions of riparian land lead to the conclusion that it is land which is tributary to, and lying along, a water course, and, as soon as the 'divide' is passed and the watershed of another stream is reached, the land can not be regarded with reference to the former stream."⁵

As said by the California Court in an action involving this subject: "If it ever was a rule anywhere (which we doubt) that the riparian owner, under riparian right alone, could take the water of the riparian stream to any part of his land contiguous to his riparian land, to the extent of taking the water entirely away from the watershed of such stream, provided he there consumed it all, it is a rule inapplicable to our conditions, and should not be adopted here. The contention of defendant, carried to its logical conclusion, would make all the lands embraced in a large tract riparian to any one or more of the creeks flowing through it, at the pleasure of the owner, regardless of the lateral extent of

³ See Secs. 461, 464.

⁴ 3 Farnham on Waters and Water Rights, p. 1903.

⁵ See, also, for irrigation as a riparian right, Secs. 498-525.

See *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971; *McCarter v. Hudson County Water Co.*, 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S. 197, 118 Am. St. Rep. 754, 10 Am. & Eng. An. Cas. 116, affirmed 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac.

Rep. 442, 77 Am. St. Rep. 158; *Chauvet v. Hill*, 93 Cal. 407, 28 Pac. Rep. 1066; *Southern California Inv. Co. v. Wilshire*, 144 Cal. 68, 77 Pac. Rep. 767; *Silver Creek etc. Co. v. Hayes*, 113 Cal. 142, 45 Pac. Rep. 191; *Miller v. Bay Cities etc. Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S. 772; *Pomona Water Co. v. San Antonio Water Co.*, 152 Cal. 618, 93 Pac. Rep. 981; *Wiggins v. Muscupiabe Water Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337.

the land, and regardless of the natural barriers which divide the entire body into separate and distinct drainage systems, each drawing its natural supply of water from distinct and separate sources. Such an interpretation of the law of riparian rights can find no support from any necessity existing in this State, and would, if adopted, lead to grave abuses, and would result in serious injustice to other riparian owners." Then, after giving the definition of the word "riparian," as relating to the bank of a stream, the Court concludes: "Now, can it be said that land whose watershed does not drain into a stream is riparian to such stream? Does it relate to the stream, or in any sense form part of its bank? Can land be riparian to two creeks whose watershed is entirely different and have no drainage connection whatever? 'The rights of a riparian proprietor, so far as they relate to any natural stream, exist *jure naturae*, because his land has by nature the advantage of being washed by the stream.' " 6 And in a later case the same Court, in reaffirming the rule, said: "Land which is not within the watershed of the river is not riparian thereto, and is not entitled, as riparian land, to the use or benefit of the water from the river, although it may be a part of an entire tract, which does extend to the river. . . . The principal reasons for the rule confining riparian rights to that part of the lands bordering on the stream which are within the watershed are that, where the water is used on such land, it will, after such use, return to the stream, so far as it is not consumed, and that, as the rainfall on such land feeds the stream, the land is in consequence entitled, so to speak, to the use of its waters. Where two streams unite we think the correct rule to be applied, in regard to the riparian rights therein, is that each is to be considered as a separate stream with regard to lands abutting thereon above the junction, and that the land lying along the watershed of one stream above that point is not to be considered as riparian to the other stream." 7

A decision of the Oregon Court has been construed as laying

6 Bathgate v. Irvine, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; the last sentence citing the opinion of Lord Selborne in Lyon v. Fishmongers' Co., 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

7 Anaheim Union Water Co. v. Fuller, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062.

See, also, Montecito etc. Co. v. Santa Barbara, 144 Cal. 578, 77 Pac. Rep. 1113; *Id.*, 151 Cal. 377, 90 Pac. Rep. 935.

down a different rule, so as to include lands in another watershed than that of the stream to which the riparian rights attached. But upon an examination of that case⁸ it will be seen that the Court admitted the rule of the California Court in the following language: "But, as we understand these cases, the Court in each instance was determining the rights of the parties then before it, and not attempting to lay down an inflexible rule as a guide in all cases. Nothing more was held or decided than that under the claim alone of riparian rights the owner of land can not, to the injury of another riparian proprietor, take water beyond the watershed, or onto lands held by a title different from the title of those through which the stream flows; and *all this we concede*." And the Court decided the case upon the question as to what is a reasonable use of the water by riparian proprietors, where others are not injured thereby. The same may be said of a Texas case,⁹ where the Court admitted the rule, but held that conditions might exist that would authorize the Court to extend the rule so as to permit water to be carried beyond the watershed; for example, if the drainage area be small and the supply of water abundant, so that other riparian owners would not be deprived of an ample supply, it might not be an unreasonable use to carry the water beyond the watershed. The same may be said of a New York case,¹⁰ where the question was, not the extent of land in connection with which the water might be used, having reference to the watershed, but rather as to the relative proportions to which the respective owners were entitled. Therefore, it can not be said that upon the question of the "divide" being the outermost boundary of the riparian lands on a certain stream there is any great conflict of authority, as far as the last cases cited are concerned. These cases simply decided the question as to what, under the facts in each particular case, was a reasonable use of the water by one riparian proprietor as against the rights of the other proprietors upon the same stream; and, included within such use, that there might be circumstances under which the water might

⁸ Jones v. Conn, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

⁹ Watkins Land Co. v. Clements, 98 Texas Civ. App. 578, 86 S. W. Rep.

733, 70 L. R. A. 964, 107 Am. St. Rep. 653.

¹⁰ Standen v. New Rochelle Water Co., 91 Hun, 272, 36 N. W. Supp. 92.

be diverted from the stream and used without the watershed of the stream, and still keep within the term of "reasonable use."¹¹ Therefore, it may be said that at least according to the great weight of authority, if it is not the unanimous authority, riparian land is limited in its extent by the extent of the watershed of the stream; in other words, lands beyond the watershed can not be regarded as riparian, though part of a single tract, held in common ownership, which borders upon the stream.

§ 463. **Extent of riparian lands**—Lands claimed as riparian must be reasonable in extent.—There is another proposition that is well settled by the authorities, and that is that the lands for which riparian rights are claimed, in any event must be reasonable in extent, after taking into consideration the extent of the riparian lands claimed by other proprietors, and the supply of the water of the stream from which the rights are claimed. And especially is this the case where the water is consumed by the use to which it is put.¹ This is true regardless of all questions as to the watershed being the boundary of such lands,² or as to the sources of title of the lands claimed to be riparian.³ In fact, this is but a statement in another form of the general rule of the common law governing the use of the waters of streams by all riparian proprietors and by virtue of their riparian rights. The right of any one proprietor to the use of the water is relative or correlative to the rights of all of the other riparian proprietors upon the same stream. By virtue of the ownership of land in proximity to the stream, he is entitled to a reasonable use of the water, which, in the first edition of this work, we defined to be "any use that does not work actual, material, and substantial damage to the common right which each proprietor has, as limited and qualified by the precisely equal right of every other proprie-

¹¹ For reasonable use of the water by riparian proprietors, see Secs. 489-496.

For irrigation as a riparian right, see Secs. 498-525.

¹ For irrigation as a riparian right, see Secs. 498-525.

² That lands riparian to a certain stream must lie within its watershed, see Sec. 462.

³ For sources of title as fixing the boundaries of riparian lands, see Sec. 464.

tor.”⁴ This rule, as stated by us, was adopted by the Supreme Court of Oregon, in a well reasoned case.⁵ And, as to whether a use by one riparian proprietor is reasonable, as stated by the Court, “does not depend so much upon the area of the land of the offending proprietor, or the place of use, as upon the effect it has upon the correlative rights of the other proprietors.”

In line with this decision, the Supreme Court of the United States, in affirming the judgment of the decision of the Court of Errors and Appeals of the State of New Jersey, in the case decided in 1907,⁶ in deciding the rights as between riparian proprietors, said: “On these assumptions the Court of Errors and Appeals pointed out that a riparian proprietor has no right to divert waters for more than a reasonable distance from the body of the stream or for other than well-known ordinary uses, and that for any purpose, anywhere, he is narrowly limited in amount.”⁷

Without here going into the question of the rights which may be acquired to the exclusive use of the water under the Arid Region doctrine of appropriation, regardless of the locality or the

⁴ Kinney on Irrigation, 1st Ed., Sec. 276.

See, also, for the use of the water by riparian proprietors, Secs. 489-496.

For irrigation as a riparian right, see Secs. 498-525.

⁵ Jones v. Conn, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634, quoting the above passage.

⁶ Hudson County Water Co. v. McCarter, 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529, affirming *Id.*, 70 N. J. Eq. 695, 65 Atl. 489, 14 L. R. A., N. S. 197, 118 Am. St. Rep. 754.

⁷ See, also, Watkins Land Co. v. Clements, 98 Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 653; Clark v. Allaman, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971; Union M. & M. Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; Hayes v. Wal-

dron, 44 N. H. 584, 84 Am. Dec. 105; Bullard v. Saratoga Victory Mfg. Co., 77 N. Y. 525; Miller v. Miller, 9 Pa. 77, 49 Am. Dec. 545; Standen v. New Rochelle Water Co., 91 Hun, 272, 36 N. Y. Supp. 92; Patten Paper Co. v. Kaukauna Water Power Co., 90 Wis. 370, 61 N. W. Rep. 1121, 63 N. W. Rep. 1019, 28 L. R. A. 443, 48 Am. St. Rep. 945; Alta Land & Water Co. v. Hancock, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; Earl Norbury v. Kitchin, 7 L. T. N. S. 685, 9 Jur. N. S. 132; Charnock v. Higuerra, 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195, wherein it is stated: “The right to take the water at all is a right to change the ordinary course of Nature; and the methods employed, so long as their use does not infringe upon the like and equal rights of others, are immaterial.”

place of use in reference to the natural stream,⁸ the rule of "reasonable use,"⁹ which absolutely governs those rights to water founded wholly upon the common law doctrine of riparian rights, does not permit one riparian proprietor to irrigate or otherwise use the water from the natural stream, where the equal or correlative rights of other riparian proprietors upon the same stream are injured or infringed upon thereby. The place where the water may be used is restricted only by the duty to refrain from injuring others, and the limit of the right is at the point where it infringes upon the rights of others.

§ 464. **Extent of riparian lands—Rules based upon the sources of titles.**—It is within the powers of the court or the legislature of a State to limit and restrict the riparian rights within its boundaries, or to abrogate them entirely.¹ It is therefore within the powers of the Court or the legislature of a State to fix the boundaries of riparian lands and to determine just what their extent shall be. This, in some of the Western States, where riparian rights have been retained as a part of its laws governing waters, the Courts have done. In some cases, as we have seen, they have fixed the rim or divide of the watershed as the outermost boundary of such lands held in common ownership.² In others they have disregarded the boundary provided by Nature, and have fixed the extent of the land upon which water might be used by virtue of riparian ownership, as a reasonable area as compared with the lands and needs of others who have the same riparian rights.³ In still other jurisdictions, the Courts have set the limit of the riparian land held in common ownership to the different subdivisions upon the stream and depending largely upon the sources of title to those lands. And upon this point it may be said that there are now three distinct rules adopted in different jurisdictions, by which the extent of riparian lands is limited and restricted in force in at least as many different States. These are as follows: First,

⁸ For the Arid Region doctrine of appropriation, see Secs. 585-594.

⁹ For reasonable use by riparian proprietors, see Secs. 489-496.

¹ For the abrogation of riparian rights, see Secs. 588-594.

² That riparian lands are those only within the watershed of a certain stream, see Sec. 462.

³ That the area must be reasonable, see Sec. 463.

the smallest separate piece or parcel of land bordering upon the stream in the history of the title of all of the land of the riparian owner at the time that the claim is made or at the time of use; second, the riparian land stops at the outermost edge of the land away from the stream as described by a single original entry of the land in the acquisition of title from the Government; and, third, that the riparian lands held in common ownership include the entire tract, no matter how acquired or from what sources of title, at the time the claim is made.

California is the leading State to adhere to the first proposition above stated. It is there in effect held that, where a person owns a tract of land bordering upon a stream the title to which was derived from a single source, it is all riparian, and that, too, regardless of the size of the tract;⁴ provided, that the entire tract continues in common ownership,⁵ and that its boundaries do not extend beyond the natural limits of the watershed.⁶ This tract remains riparian land as long as the title to the entire tract continues in common ownership; but the riparian tract can not be

⁴ *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217, where the tract owned was 1,280 acres, and it was contended that 160 acres of the same were not riparian, the occupancy to the same having been held by a trespasser without segregation of title. But the Court held that the 160 acres were riparian, and said: "Situate as this tract was, a half-mile or more away from the stream, if it had been held by a title separate from and independent of the 1,280-acre tract, it would not have been riparian, and no portion of the waters of the stream would have been appurtenant to it; but the 120 acres was a part of, and never segregated from, the 1,280 acres, all of which was riparian to the stream. . . . Nor can the area of the lands to which riparian rights are appurtenant be diminished by the acts of a trespasser segregating for

the time being the actual occupancy, without segregation of title."

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674, where it is said: "If, however, lands have been granted by patent, and the patent was issued on the cancellation of more than one certificate, the patent can operate by relation (for the purposes of this suit) to the date of those certificates only, the lands described in which border on the stream." The case thus held in effect that all sections or fractional sections, mentioned in any one certificate of purchase, would constitute but a single tract of land, as far as riparian rights were concerned, and that the lands covered by the other certificates were not riparian.

See, also *Boehmer v. Big Rock Irr. Dist.*, 117 Cal. 19, 48 Pac. Rep. 908.

⁵ That the ownership must be in common, see Sec. 461.

⁶ See Sec. 462.

added to by the purchase of other tracts contiguous to the first tract, where these last are not themselves riparian. And it is further held that mere contiguity of quarter sections with another quarter section, through which a stream runs, does not make the former riparian, although all are owned by the same person, where they are granted by separate patents, though issued to the same individual, based upon separate entries.⁷ Again, if the owner sells off a portion of the original tract, not adjoining the stream, by that act all riparian rights are cut off forever from such segregated tract;⁸ and that is true, even if the tract so sold should be again repurchased by the owner of the tract actually riparian. As was said in a case decided in 1907: "Land thus conveyed and severed from the stream can never again regain the riparian right, although it may thereafter be reconveyed to the person who owns the part abutting on the stream, so that the two tracts are again held in one ownership."⁹ Therefore, it may be considered the present rule in California that, however great or however small the tract of land may be which borders upon a stream, and which is in common ownership, it is all riparian; provided, that it was acquired through a single source of title, and is all within the watershed of the stream in which riparian rights are claimed.¹⁰

Upon our second proposition, stated above, that riparian land stops at the outermost edge of the land from the stream as de-

⁷ *Boehmer v. Big Rock Irr. Dist.*, 117 Cal. 19, 48 Pac. Rep. 908.

⁸ That a sale of land back from the stream cuts off riparian rights, see Sec. 461.

⁹ *Anaheim Union Water Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062, citing *Boehmer v. Big Rock Irr. Dist.*, 117 Cal. 19, 48 Pac. Rep. 908; *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Watkins Land Co. v. Clements*, 98 Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 653; 2 *Farnham on Waters*, 1572, Sec. 463a.

¹⁰ In this connection it may be said that there is nothing in the decision of *Hudson v. Dailey*, 156 Cal. 617, 105 Pac. Rep. 748, which tends in any way to modify or overrule the former decisions of the Court cited above limiting the extent of riparian lands in that State. In that case the Court simply decided the rights of landowners to the use of waters underlying their lands, and said: "Such waters, together with the surface stream supplied by them, should be considered a common supply, in which all who by their natural situation have access to it have a common right, and of which they may make a reasonable use upon the land so situated, taking it either from the surface flow, or di-

scribed by a single original entry of land as acquired from the Government, the Nebraska Court seems to lead. In a leading case upon the subject¹¹ it was held that, in any event, the extent of riparian land can not exceed the area acquired by a single entry or purchase from the Government; and queried whether, in view of the policy of the Government in the distribution of its public land, such riparian land should exceed the smallest legal subdivision of a section (that is, 40 acres), or in lieu thereof, if an irregular tract, a designated numbered lot which borders upon the natural stream. It was further held that this right could not be augmented or extended by the acquisition of the title to lands contiguous to the riparian land. The State of Texas has adopted the same rule as that of Nebraska, that the boundaries of the Government subdivisions, so far as they lie within the watershed, will govern in determining what land is riparian so as to entitle it to the use of the water from the stream for irrigation purposes, in the absence of special circumstances. "Riparian rights arise out of the ownership of land through or by which a stream of water flows, which rights can not extend beyond the original survey as granted by the Government. . . . Another limitation upon the right of the riparian proprietor is that he can not ordinarily divert water to land lying beyond the watershed of the stream."¹²

The third proposition stated above we will discuss in the following section.¹³

rectly from the percolations beneath their lands." It will be noticed that the Court in no way attempts to limit or define what are riparian lands, but simply relies upon the well-settled rule of access, or lands bordering upon or overlying such waters.

11 *Crawford County v. Hathaway* (Hall.), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647.

12 *Watkins Land Co. v. Clements*, 98 Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 653, citing *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Boehmer v. Big Rock Irr. Dist.*, 117 Cal. 19, 48 Pac. Rep. 908; 2 Farn-

ham on Waters, Sec. 463a, p. 1572, where it is said: "The most satisfactory rule is that the parcels of land should be regarded as riparian, so far as their location with reference to the stream has indicated where their boundary should be fixed, so that all that parcel which is regarded as one tract should be regarded as riparian, leaving the question of the extent of use which may be made of the water to the rules regulating the relative rights of owners of the stream. Under this rule the boundary of riparian land is restricted to land the title to which is acquired by one transaction."

¹³ See Sec. 465.

§ 465. **Extent of riparian lands—Rule that all lands in common ownership at time of claim are riparian.**—The third rule, as stated in the previous section, limiting riparian lands to those based upon the source of title to such lands,¹ is that all lands held in common ownership at the time of the claim or the use is made of the water of the stream adjoining them should be regarded as riparian to such stream, and that, too, regardless as to how or when such lands were acquired, or from whatever sources of title. In other words, a tract of riparian land may be segregated so that any portion not touching upon the stream may be cut off, during the period of such segregation, from all riparian rights.² Again, upon the other hand, a tract of riparian land may be augmented by the purchase of contiguous tracts which have by themselves no actual contact with the stream, but which become riparian upon being added to the tract which actually touches upon the stream. This is the true rule of the common law. As stated by Mr. Weil, quoting from an English authority:³ “The following is a statement of the general common law: ‘If riparian property becomes divided between two owners, so that one portion no longer adjoins the stream, that portion no longer retains any riparian rights.’⁴ Conversely, land which adjoins riparian land may become itself riparian by becoming united therewith in ownership.”⁵

The rules as stated under our first and second divisions, as set forth in the previous section,⁶ are rules adopted by the various States and modify the common law. But, as long as we are dealing with a common law subject, it becomes necessary to know just what the common law rule is. The common law knows nothing of governmental subdivisions, and hence could not have made such a subdivision the extent of riparian lands. It also does not regard the riparian land limited to the smallest subdivision in the chain of title of an entire tract. Otherwise, during the hundreds of years of conveyancing, it can be readily seen that riparian lands in England would have become smaller and smaller in area,

¹ For the different rules, see Sec. 464.

² For the effect of the segregation of riparian land, see Sec. 461.

³ Weil on Water Rights in the Western States, 3d Ed., p. 841.

⁴ Citing *Stockport Waterworks v.*

Potter, 3 Hurlst. & C. 300, 10 Jur. N. S. 1005, 10 L. T. N. S. 748, affirmed in 7 Hurlst. & N. 160, 31 L. J. Exch. 9, 7 Jur. N. S. 880.

⁵ Quoting from *Salmond on Torts*, p. 252.

⁶ See Sec. 464.

without the right of augmentation, until in many instances they would be nothing but a thread upon the stream, which would have attached to it all of the riparian rights, and probably far in excess of its needs, and to the entire exclusion of riparian rights of all the other lands within the same watershed, although they might be held in common ownership with the small tract actually riparian. Under the common law of England riparian lands are not restricted to any such narrow limitations; and, consequently, riparian rights are not so restricted, but depend more upon the settled rule of "reasonable use"⁷ by one proprietor regardless of the extent of his riparian lands, after taking into consideration the rights of all the other owners upon the same stream. In other words, the extent of "riparian land" is not the sole limit of riparian rights; but the gist of the question is the reasonable use of those rights upon all of the lands which touch upon the stream, and are held at the time in common ownership, and are within the natural boundaries of the watershed.

Although, as we have said before, a State has the power to adopt any rule it sees fit in limiting or defining riparian lands or in maintaining or abolishing riparian rights,⁸ we consider that the more consistent rule as to the extent of riparian lands back from the stream to be, to include all lands which are owned in common, regardless of the source or sources of title, and which are within the watershed of the stream, upon which a portion of such lands border, leaving the question of extent of the use which may be made of the waters of the stream to the settled rule of "reasonable use," and taking into consideration the relative or correlative rights of all the other riparian owners whose lands also touch upon the same stream.

The above is the rule adopted by the Supreme Courts of Oregon and Kansas. The case of *Jones v. Conn*⁹ holds that the right of a riparian proprietor to use the water for irrigation purposes is not limited to the tract of land actually bordering on the stream, as first segregated, but extends to lands lying back of such tract contiguous to it, and afterward purchased by him from other persons. In support of this proposition the Court said: "It would

⁷ For the rule of reasonable use, see Secs. 489, 496, 511-513.

⁸ See Secs. 588-594.

⁹ 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

seem, therefore, that any person owning land which abuts upon, or through which a natural stream of water flows, is a riparian proprietor, entitled to the rights of such without regard to the extent of his land, or from whom or when he acquired his title. The fact that he may have procured the particular tract washed by the stream at one time, and subsequently purchased land adjoining it, will not make him any less a riparian proprietor, nor should it alone be a valid objection to his using the water on the land last acquired. The only thing necessary to entitle him to the right of a riparian proprietor is to show that the body of land owned by him borders upon a stream. This being established, the law gives to him certain rights in the water, *the extent of which is limited and controlled less by the area of his land than by the volume of the water and the effect of its use upon the rights of the other riparian proprietors*. By virtue of the ownership of land in proximity to the stream he is entitled to a reasonable use of the water, which is defined as 'any use that does not work actual, material, and substantial damage to the common right which each proprietor has, as limited and qualified by the precisely equal right of every other proprietor.'¹⁰ In the determination of what will be considered such a use in a particular case, the character and extent of the land, its location, and the time of acquiring the title, may all become, and are, no doubt, important factors to be considered; but they are not controlling, and each case must depend entirely upon its own facts and circumstances." The Kansas Court, upon the authority of *Jones v. Conn*,¹¹ adopted the same rule, and held that, in determining the quantity of land which might be considered riparian, the principle of equality of right of the riparian owner with the others should control, irrespective of the accidental matter of subdivisions of the land.¹²

§ 466. The character of lands to which rights attach.—The question of the character of the lands to which riparian rights attach does not seem to have been discussed to any extent by the

¹⁰ Citing Kinney on Irrigation, 1st Ed., Sec. 276.

¹¹ *Supra*.

¹² *Clark v. Alleman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

That the use of water for irrigation as a riparian right must be confined to riparian land, see, also, Secs. 514-516.

English authorities. The rule, therefore, is the same under the strict construction of that rule, the only requisite being that the lands touch or border upon the stream. But under the modified rule of the common law of riparian rights, as adopted in some of the Western States of this country where the principal use of the water is for irrigation, the character of such lands to which such rights attach or are claimed must be considered. It stands to reason that an owner whose lands are so hilly and rocky that they are absolutely unfit for cultivation, although they may adjoin a stream and be strictly riparian, can not claim the right by virtue of such ownership to the use of the water for irrigation; and, therefore, it can be said that riparian rights do not attach to such lands. He has no use for the water upon his own lands, and he has no right by virtue of riparian ownership alone to conduct the water to lands not riparian. This is the positive holding in a California case, where it was found that the riparian lands were valueless for agricultural purposes. And the Court said: "A riparian proprietor's claim to make such use of the waters of a stream is, of course, without legal foundation."¹ This, of course, is a modification of the common law riparian right to the undiminished flow of the stream, regardless of the use of the water, a subject which will be discussed in subsequent sections of this work.² It makes the legality of such a claim depend more upon the actual use of the water, or at least the possibility of its use upon the riparian land, than upon the fact that the land touches upon the water, and, therefore, is strictly riparian.³

¹ Montecito Valley Water Co. v. Santa Barbara, 151 Cal. 377, 90 Pac. Rep. 935, see *Id.* on a former appeal, 144 Cal. 578, 77 Pac. Rep. 1113.

See, also, Jones v. Conn, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634, where it was held that the character of the land was a proper subject for consideration.

See, also, Riverside Water Co. v. Gage, 89 Cal. 410, 26 Pac. Rep. 889; Southern California Inv. Co. v. Wilshire, 144 Cal. 68, 77 Pac. Rep. 767.

² For the riparian right to the flow of the stream, see Secs. 543-549.

³ See, also, for irrigation as a riparian right, Chap. 26, Secs. 498-525.

CHAPTER 23.

TO WHAT WATERS RIPARIAN RIGHTS ATTACH.

§ 467. Scope of chapter.

§ 468. Rights attach to all natural water courses.

§ 469. Natural water courses—Rights attach to navigable rivers.

§ 470. Natural water courses—Rights attach to flood waters of streams.

§ 471. Natural water courses—Rights attach to certain subterranean waters.

§ 472. Natural water courses—Interstate rivers and streams.

§ 473. Riparian rights do not attach to artificial water courses unless by lapse of time they are deemed natural.

§ 474. Lakes and ponds—General rule.

§ 475. Riparian rights also attach to natural lakes and ponds—Western rule.

§ 467. **Scope of chapter.**—Having discussed in the preceding chapters of this part the nature of riparian rights,¹ and to what lands riparian rights attach, in the present chapter we will discuss the subject to what waters such rights attach.²

§ 468. **Rights attach to all natural water courses.**—In general it may be said that under the common law riparian rights attach to all natural water courses,¹ and that, too, whether the same be called a river,² stream,³ creek, brook, or rivulet,⁴ and to their branches and tributaries.⁵ They also attach in certain instances to ravines when these have all the essential characteristics of a water course and, therefore, are water courses.⁶ They also attach to sloughs, when these are considered a part of a water course, or a

¹ See Chap. 21, Secs. 450-456.

² See Secs. 468-475.

¹ For definitions and description of natural water courses, see Secs. 301-307.

² Sec. 308.

³ Sec. 309.

⁴ Sec. 310.

⁵ Sec. 311. And that, too, even if such tributaries are small and flow directly from springs. See *Hollett v. Davis*, 54 Wash. 326, 103 Pac. Rep.

423, where it is held that where the flow from a spring is sufficient to form a water course the flow is governed by the common law rule of riparian rights.

See, also, *Chauvet v. Hill*, 93 Cal. 407, 28 Pac. Rep. 1066; *Barneich v. Mery*, 136 Cal. 205, 68 Pac. Rep. 589.

For the appropriation of water from tributaries, see Sec. 649.

⁶ For ravines as natural water courses, see Sec. 312.

branch thereof.⁷ Riparian rights also attach to all classes of the flow of water courses or streams—the natural surface flow, the subterranean or underground flow,⁸ and to the ordinary flood or storm waters.⁹ They do not, however, attach to marshes or swamps with no natural outlet.¹⁰ They attach to known and defined underground streams, under exactly the same principles as to surface streams.¹¹ It makes no difference as to the size of the streams. They may be of an actual navigable capacity,¹² or they may be the smallest rivulets, provided, always, that they have all of the essential characteristics of water courses.¹³ One may have riparian rights in a stream even though its source be a spring upon the land of another, yet it must be a stream that was wont to flow from time immemorial.¹⁴ There is one requisite, and that is the water course or stream must be a natural one, or a stream, which by lapse of time, is deemed natural. Riparian rights do not attach to artificial water courses or streams.¹⁵

We will now take up in detail some of the waters to which riparian rights attach, and refer by our cross-references to where the subject is discussed as to other waters in other portions of this work.

§ 469. Natural water courses—Rights attach to navigable rivers.—Riparian rights attach to all navigable water courses and

⁷ For sloughs as natural water courses, see Sec. 315.

See, also, *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823, where the Court held that, as regards the taking of water for purposes of irrigation, the rights of persons owning lands adjoining a slough connected with a river are equal and coextensive with those of persons owning land bordering upon the river itself.

See, also, *Strong v. Baldwin*, 154 Cal. 150, 97 Pac. Rep. 178, 129 Am. St. Rep. 141.

⁸ See Secs. 1154-1160, 1193-1195, where the entire subject will be dis-

cussed relative to the rights in subterranean or underground waters.

⁹ For riparian rights in flood waters, see Sec. 470.

¹⁰ *Hayward v. Mason*, 54 Wash. 649, 104 Pac. Rep. 139.

¹¹ For riparian rights in underground streams, see Sec. 471.

¹² For riparian rights on navigable streams, see Sec. 469.

For the right of navigation, see Chap. 16, Secs. 341-357.

¹³ See Secs. 302-307.

¹⁴ *Mason v. Yearwood*, 58 Wash. 276, 108 Pac. Rep. 608; *Hollett v. Davis*, 54 Wash. 326, 103 Pac. Rep. 423; *Miller v. Wheeler*, 54 Wash. 429, 103 Pac. Rep. 641, 23 L. R. A., N. S. 1065.

¹⁵ See Sec. 473.

rivers as well as to those which are non-navigable.¹ In previous sections of this work, we have discussed some of these riparian rights. In certain States the riparian owner owns the beds of the large navigable rivers above the tide waters. In others the beds are owned by the State. As we have stated before the rule in this country as to whether the riparian owners or the State own the beds of the large navigable or public rivers is left entirely to the respective States wherein the riparian lands are situated.² In any event, whether he owns the bed of the river or not, the riparian owner has the sole right of access to and from his lands adjoining such streams.³ Even upon portions of these rivers which are subject to the ebb and flow of the tide, although the general rule is that the riparian owners do not own the beds of such streams, there are certain riparian rights which attach, such, for example, as the right of access.⁴

When we come to the right of the riparian proprietor to the flow of the stream or his right to make a reasonable use of the waters of the stream, in general, we may say that the same rights attach to a navigable stream as attach to a nonnavigable stream,⁵ subject, of course, to the public right of navigation in the stream. Therefore, it is held that riparian owners, in the case where the river has been improved in aid of navigation, have the right to insist that the water which is not required for navigation be returned to its accustomed channel in such a manner and place that it will flow past their lands as it was accustomed to flow.⁶ In the

¹ See previous Sec. 468.

² For the ownership of the beds of fresh water navigable rivers, see Secs. 328-332.

For the right of navigation, see, also, Chap. 16, Secs. 341-357.

³ For the right of access to public waters, see Secs. 335-337.

⁴ For the ownership of the beds of tidal waters, see Secs. 325, 326.

See, also, Secs. 335-337.

See, also, *North Shore Railway v. Pion*, L. R. 14 App. Cas. 612, affirming *Lyon v. Fishmongers' Co.*, L. R. 1 App. Cas. 683, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

⁵ For the right of a riparian proprietor to make a reasonable use of the water, see Secs. 484-496.

⁶ *Green Bay & M. Canal Co. v. Kaukauna Water Power Co.*, 90 Wis. 370, *sub nom.* *Patten Paper Co. v. Kaukauna Water Power Co.*, 61 N. W. Rep. 1121, 63 N. W. Rep. 1019, 28 L. R. A. 443, 49 Am. St. Rep. 937; *Id.*, 93 Wis. 383, 66 N. W. Rep. 601, 67 N. W. Rep. 432; *Kaukauna Water Power Co. v. Green Bay & M. C. Co.*, 142 U. S. 254, 35 L. Ed. 1004, 12 Sup. Ct. Rep. 173; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393.

But see *St. Anthony Falls Water Power Co. v. Water Commissioners*,

Western States, adhering to the doctrine of riparian rights,⁷ it is generally conceded that a riparian owner has the same rights by virtue of his ownership in the use of the waters of the stream whether they are navigable or nonnavigable; provided, always, that the easement of navigation by the public is in no way interfered with. This is the rule in California.⁸

In conferring the authority to improve the navigation of rivers, it was held by the Washington Court that the legislature did not delegate the right to take or damage the rights of riparian owners without compensation, the Court saying: "The respondent, being a riparian owner upon the Kalama River, has, as such, valuable property rights which can not be taken or damaged for public use without compensation. One of these is its right to a continuance of the natural and ordinary flow of the water over, across, and past its lands. This riparian right, guaranteed by the common law, has been repeatedly recognized and protected by this Court."⁹ This

168 U. S. 349, 42 L. Ed. 497, 18 Sup. Ct. Rep. 157, where it was held that the appropriation of the waters of a lake for a city water supply, thereby preventing their flowing past a water power plant in a river, without any compensation for the resulting injury to riparian owners, is a matter of local law on which the Federal Courts must follow the State decisions.

See, also, *Scranton v. Wheeler*, 179 U. S. 141, 45 L. Ed. 126, 21 Sup. Ct. Rep. 48; *Morrill v. St. Anthony Falls Water Power Co.*, 26 Minn. 222, 2 N. W. Rep. 842, 37 Am. Rep. 399, where it was held that a riparian owner upon a navigable stream may use the water flowing past his land for any purpose, so long as he does not impede the navigation of the stream:

See, also, *Williams v. Fulmer*, 151 Pa. 405, 25 Atl. Rep. 103, 31 Am. St. Rep. 767.

⁷ For these States, see Sec. 507.

⁸ In the case of *Heilbron v. Fowler Switch Canal Co.*, 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183, it is said: "We see no occasion to dis-

cuss the question as to whether the river is navigable or not. In either event, the result would be the same. The riparian owner on a nontidal navigable stream has all the rights of a riparian owner not inconsistent with the public easement. . . . The right of the State to interfere with the flow there would certainly be limited to the interest of navigation," citing *Brown v. Chadbourne*, 31 Me. 9, 50 Am. Dec. 641; *Moore v. Sanborne*, 2 Mich. 519, 59 Am. Dec. 209; *Wood, Nuis.*, Sec. 485; *Smith v. City of Rochester*, 92 N. Y. 463; *Woodruff v. North Bloomfield etc. Co.*, 8 Saw. 628, 16 Fed. Rep. 25, 9 Saw. 41, 18 Fed. Rep. 753.

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁹ *Kalama Electric Light & Power Company v. Kalama Driving Co.*, 48 Wash. 612, 94 Pac. Rep. 469, 22 L. R. A., N. S. 641, 125 Am. St. Rep. 948; *Monroe Mill Co. v. Menzel*, 35 Wash. 487, 77 Pac. Rep. 813, 70 L. R. A. 272, 102 Am. St. Rep. 905; *Spokane Valley Land & Water Co. v. Arthur*

is also held to be the rule in the State of Texas, and that the riparian owner's right can not be taken or damaged without compensation even in the improvement of navigation in a river.¹⁰

The State of Nebraska, however, adopts a different rule, and holds that navigable rivers are not subject to riparian rights, especially as to the use of the waters. "As to navigable streams, the doctrine seems to be that the water and the soil thereunder belong to the State, and are under its sovereignty and domain, in trust for the people, and can not, therefore, be subject of a claim of property therein, or the right to the use thereof by an adjoining landowner. . . . The waters in such streams would be held to be *publici juris*, and not be subject to riparian claims by the adjoining landowner."¹¹ The court is inconsistent in its holding upon this point. It holds that riparian rights do attach to the smaller nonnavigable streams of the State. As said by Lord Chelmsford, in the case of *Lyon v. Fishmongers' Company*,¹² there is "no sound principle upon which the distinction between the two descriptions of natural streams can be supported." Riparian rights certainly naturally attach to both navigable as well as nonnavigable streams. The Court was also unfortunate in its citation of authorities.¹³

The cases cited do not decide that riparian rights do not attach to navigable streams. But what they do decide, as far as the subject under discussion is concerned, is that *each State has the power to decide for itself whether or not such rights shall attach to such streams*, and whether or not the riparian owner or the

Jones Co., 53 Wash. 37, 101 Pac. Rep. 515; *Crook v. Hewett*, 4 Wash. 749, 31 Pac. Rep. 28; *Rigney v. Tacoma Light & W. Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425; *New Whatcom v. Fairhaven Land Co.*, 24 Wash. 493, 64 Pac. Rep. 735, 54 L. R. A. 190; *Mathews v. Belfast Mfg. Co.*, 35 Wash. 662, 77 Pac. Rep. 1046.

¹⁰ *Bigham Bros. v. Port Arthur etc. Co.*, 100 Tex. 192, 97 S. W. Rep. 686, 13 L. R. A., N. S., 656, reversing 91 S. W. Rep. 848.

¹¹ *Crawford v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647,

citing *Shively v. Bowlby*, 152 U. S. 1, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Martin v. Waddell*, 41 U. S. 16 Pet. 367, 10 L. Ed. 997; *Pollard v. Hagan*, 44 U. S. 3 How. 212, 11 L. Ed. 565; *Richardson v. United States*, 100 Fed. Rep. 714.

¹² L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

¹³ See last note, *supra*.

State shall be the owner of the soil under the water. Under these authorities, however, we can not doubt the power of the Nebraska Court to decide the case as it did, in holding that riparian rights attach to nonnavigable streams but do not to navigable streams.¹⁴

§ 470. **Natural water courses—Rights attach to the flood waters of streams.**—Riparian rights attach to all parts of the flow of water courses. This, of course, includes the flood or storm waters of streams, especially where such waters are confined to their natural channels.¹ But as to the extent to which riparian rights attach to flood waters of a stream the authorities do not quite agree. The more modern rule is that, as against the rights of an appropriator for nonriparian use of the water, the riparian rights of the owner of the banks of the stream only extend to the natural flow of the stream, unless actual damage is shown by the diversion of the water. The Nebraska Court held that the riparian owner, at most, "was entitled to only the ordinary and natural flow of the stream, or so much as was found necessary to propel his mill machinery, and could not lawfully claim, as against an appropriator, the flow of the flood waters of the stream."² Other authorities hold that riparian rights attach to all flood waters of the stream which can be counted upon as certain to occur annually, but do not attach to the waters caused by extraordinary and unexpected floods. As was said in a California case: "But the rights of the riparian proprietor do not depend upon the quantity of water flowing in the stream. Nor can that flow be said to be extraordinary which can be counted upon as certain to occur annually and to continue for months."³ This subject will be further discussed in other portions of this work.⁴

¹⁴ See, also, upon this subject, Secs. 325-332, 374.

For the abrogation of riparian rights, see Secs. 588-594.

¹ For flood or storm waters of streams, see Sec. 319.

² *Crawford v. Hathaway* (Hall.), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Miller & Lux v. Madera Canal & Irr. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S. 391; *Still v. Palouse Irr.*

& Power Co., 64 Wash. 606, 117 Pac. Rep. 466.

³ *Heilbron v. Fowler Switch Canal Co.*, 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183.

⁴ For the rights of appropriators as against those of riparian owners, see Secs. 810-823.

For the right of injunction against the appropriation of flood waters, see Sec. 563.

§ 471. **Natural water courses—Rights attach to certain subterranean waters.**—Riparian rights also attach to certain classes of subterranean or underground waters.¹ To underground water courses, the waters of which flow in known and defined channels, riparian rights attach the same as to surface streams. Riparian rights also attach to the underground flow of surface streams.²

While there are no riparian rights which attach to the ordinary percolating waters, to those underground waters which underlie lands in artesian basins³ or catchment basins⁴ under the more modern rule governing these waters as laid down in California in the case of *Katz v. Walkinshaw*,⁵ it is held that the rights of the owners of land over these basins in and to the waters are analogous to the rights of riparian proprietors to the waters of streams adjoining which their lands lie. As said in a California case: "The land being so situated that it has the natural advantages afforded by the underlying water, the conditions are analogous to those affecting land riparian to a stream, which, because of its situation with reference to the stream, is given rights to the waters thereof," etc.⁶

The entire subject of subterranean or underground waters will be discussed in a separate portion of this work.⁷

§ 472. **Natural water courses—Interstate rivers and streams.**—Riparian rights also attach to interstate rivers and streams and also to other interstate bodies of water. Upon the same stream there may be two distinct systems governing the use of waters. In one State through which such a stream runs may be the doctrine of riparian rights, while in another these rights may be entirely abolished. This was illustrated in the case of *Kansas v. Colorado*,¹ where it was held that each State had the right to adopt such rule

¹ For the classification of subterranean waters, see Secs. 287, 323.

² See Sec. 1158.

³ For artesian basins, see Secs. 1167-1184.

⁴ See Secs. 1197-1204.

⁵ 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35.

⁶ *Burr v. MacLay Rancho Water Co.*, 154 Cal. 428, 98 Pac. Rep. 260.

See, also, *Hudson v. Dailey*, 156 Cal. 617, 105 Pac. Rep. 748; *Miller v. Bay Cities Water Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S. 772.

⁷ See Chaps. 59-62, Secs. 1148-1211. 1 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655. For the same case on demurrer, see 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552.

as it saw fit governing and controlling the waters within its boundaries, and that "Congress can not enforce either rule upon any State,"² but that the power of a State in this respect was subject to the jurisdiction of the General Government to take all needed measures to preserve the navigable capacity of the navigable water courses of the United States, even against any State action; and that in the absence of any specific authority from Congress a State can not by its legislation destroy the rights of the United States, as the owner of lands bordering upon a stream, to the continued flow of its waters; so far, at least, as may be necessary for the beneficial uses of Government property.³

The subject of interstate waters, however, will be more thoroughly discussed in another chapter.⁴

§ 473. Riparian rights do not attach to artificial water courses unless by lapse of time they are deemed natural.—As to whether or not any riparian rights can attach to artificial water courses depends entirely upon their origin and character. If they are clearly artificial channels, such as canals, ditches, conduits, or aqueducts, used to convey the water from the stream or other body of water, riparian rights can not attach.¹ In order to acquire the

² See, also, Secs. 326, 328, 334.

³ See, also, *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 184 U. S. 416, 46 L. Ed. 619.

See, also, for navigation as against irrigation, Secs. 354-356.

For the effect of the dedication of waters by a State, see Sec. 388.

⁴ See Chap. 64.

¹ *Green v. Carotta*, 72 Cal. 267, 13 Pac. Rep. 685; *Wood v. Waud*, 3 Exch. 748, 182 L. J. Exch. N. S. 305, 13 Jur. 472; *Greatex v. Hayward*, 8 Exch. 291, 22 L. J. Ex. 137; *Magor v. Chadwick*, 11 Ad. & El. 571; *Fox River F. & P. Co. v. Kelley*, 70 Wis. 298, 35 N. W. Rep. 744, where the Court held that merely acquiring land across which runs an artificial channel,

in the absence of grant or title by adverse user, gives no riparian right to use water from the channel.

See, also, *Nield v. London R. Co.*, L. R. 10 Exch. 4, 23 Week. Rep. 60, 44 L. J. Exch. N. S. 15; *Arkwright v. Gell*, 5 Mees. & W. 203, 2 Horn. & H. 17, 8 L. J. Exch. N. S. 201; *Creighton v. Kaweah*, 67 Cal. 221, 7 Pac. Rep. 658; *Bailey v. Clark*, 86 L. T. N. S. 309; *Sampson v. Hoddinott*, 1 C. B. N. S. 590, 26 L. J. C. P. N. S. 148, 3 Jur. N. S. 243, 5 Week. Rep. 230, 87 E. C. L. 590; *Chamberlain v. Hemingway*, 63 Conn. 1, 27 Atl. Rep. 239, 22 L. R. A. 45, 38 Am. St. Rep. 330; *Ligare v. Chicago, M. & N. R. Co.*, 166 Ill. 249, 46 N. E. Rep. 803.

That no riparian right can attach to artificial ponds, see *Burrows v. Lang*, 2 Ch. 502, 70 L. J. Ch. N. S.

right to the use of water flowing in artificial channels, they must be based upon other considerations than that of the ownership of the land through which or adjoining which the streams run. It must depend upon some grant or agreement, either proved or presumed, from or with the owner of the ditch, or upon some other legal origin, such, for instance, as prescription.² Upon the other hand, however, the authorities hold that a water course, although constructed artificially, may have originated under such circumstances as to give rise to all the rights that riparian proprietors have in a natural and permanent stream, or have been so long used as to be deemed by prescription natural water courses.³ Such is the case where the whole stream is diverted into the new channel, and thereby the artificial channel is substituted for the natural. Where this is done under such circumstances as to indicate that it is to be permanent, riparian rights may attach to the artificial channel.⁴ And it is further held that where the artificial water course was not created by joint action of the owners, it may become such a one to which riparian right may attach, if the various owners along its course have always treated it as such.⁵

607, 84 L. T. N. S. 623, 49 Week. Rep. 564.

See, also, *Irrigation as a Riparian Right*, Secs. 499-525.

² For prescriptive right to the use of water of artificial channels, see Sec. 662.

³ *Sutcliffe v. Booth*, 32 L. J. Q. B. N. S. 136, 9 Jur. N. S. 1037; *Ivimey v. Stacker*, L. R. I. Ch. 396, 409; *Nuttall v. Bracewell*, L. R. 2 Exch. 1; *Murchie v. Gates*, 78 Maine 300; *Seibert v. Levan*, 8 Pa. St. 383; *Reading v. Althouse*, 93 Pa. St. 400; *Roberts v. Richards*, 44 L. T. N. S. 271, 50 L. J. Ch. N. S. 297; *Adams v. Manning*, 48 Conn. 477, 51 Conn. 5; *Peter v. Caswell*, 38 Ohio St. 518; *Miner v. Gilmore*, 12 Moo. P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Reprint 861; *Freeman v. Weeks*, 45 Mich. 335. Where a party having made a ditch six feet wide through his land conveyed a part of such land bounding on the ditch

the grant was held to extend to the center of the ditch. *Warner v. Southworth*, 6 Conn. 471.

⁴ See cases, *supra*; *Sutcliffe v. Booth*, 32 L. J. Q. B. N. S. 136, 9 Jur. N. S. 1037; *Townsend v. McDonald*, 14 Barb. 460, 12 N. Y. 381, 64 Am. Dec. 508; *Blackburn v. Somers, Jr.*, L. R. 5 Eq. 1; *Adams v. Manning*, 48 Conn. 477, 51 Conn. 5; *Baily v. Clark*, 86 L. T. N. S. 309; *Fleming's Appeal*, 65 Pa. 444.

⁵ This was the case in *Baily v. Clark*, 86 L. T. N. S. 309, where it had existed for several centuries, and had always been treated as a natural water course.

See, also, *Roberts v. Richards*, 50 L. J. Ch. N. S. 297, 44 L. T. N. S. 271.

See, also, *irrigation as a riparian right from artificial water courses*, Sec. 473.

In a recent case in Texas,⁶ it was held that the canal of an irrigation company, which had condemned all of the waters of a stream, should be treated the same as the stream as affecting the question whether land of a purchaser from the company on the line of the canal is riparian land. It is also held that an artificial mill pond, maintained as such for more than forty years and sold for the establishment of an ice business for the continued maintenance of the pond, is changed from its artificial condition to a natural one, and that the grantor can not remove the dam, or sell it to another for removal, after his sale of the pond to the ice company.⁷ The proprietor of a stream who diverts it into an artificial channel and continues such change for a time exceeding the statute of limitations is estopped, as against a person making beneficial use of the water below, to return it to its natural channel to the latter's injury.⁸

§ 474. **Lakes and ponds—General rule.**—The riparian rights of proprietors whose lands border upon lakes and natural ponds, as well as the ownership of the soil under the same, do not appear to have been settled by the early English authorities.¹ In the case of *Paine v. Woods, Wells, J.*, said: "The English books offer little light on this subject. . . . But the question whether the title in the land under the fresh water pond or lake is in the proprietor of the lands adjoining or in the Crown does not seem to have been ever judicially determined in England."² But in this country, in general, we may say that the same rules relative to riparian rights attach to the ownership of the soil bordering upon an inland lake or pond as those which govern the ownership of the banks of streams or rivers regardless of the fact as to whether they are navigable in fact or not, or whether the owners of the bank are also owners of the soil under the water or not. This is especially so concerning the particular uses and appropriation of water by riparian owners. The weight of authority seems to hold that riparian rights proper rest upon the title to the bank of the lake, and not upon the title to the soil under the water, and they are the same whether the

⁶ *McKenzie v. Beason*, — Tex. Civ. App. —, 140 S. W. Rep. 246.

⁷ *Marshall Ice Co. v. La Plant*, 136 Iowa 621, 111 N. W. Rep. 1016, 12 L. R. A., N. S. 1073.

⁸ *Hollett v. Davis*, 54 Wash. 326, 103 Pac. Rep. 423.

¹ *Marshall v. Ulleswater Nav. Co.*, 3 B. & S. 732; *Id.*, L. R. 7 Q. B. 166.

² *Paine v. Woods*, 103 Mass. 160.

riparian owner owns the soil under the water or not.³ So the owner of lands upon a navigable lake has, as such, the exclusive right of access to and from the lake in front of his land and the right to construct there buildings, piers, and wharves not interfering with the public easement of navigation.⁴ Also, if a lake, whether navigable or not, recede gradually and insensibly, the derelict land belongs to the adjacent riparian proprietor. The right of access is not lost by the gradual and imperceptible recession of the water, but the land gained by the reliction belongs to the owner of the contiguous land to which the addition is made.⁵

So, in general, we can say that every owner of land abutting upon a natural inland lake or pond has, like the owner of land bordering upon a river or stream, a usufruct in the waters of the lake or pond, and has a common right with his neighbors to the natural flow of the water in its accustomed place, without unnatural detention or substantial diminution in quantity or deterioration in quality; and none can make any use of it that shall in any way be prejudicial to the other owners, unless he has acquired a right to so use it by license, grant, or prescription.⁶ Where the water of a lake recedes gradually and imperceptibly from the shore, the new land belongs to the riparian owner; but, upon the other hand, if the recession is sudden, the title to the land remains in the former owner.⁷ The owner of land on a natural lake or pond has a right to have the natural level of the water maintained, so that he may enjoy his riparian rights. Therefore the owners lower down will

³ *Diedrich v. N. W. Union Ry. Co.*, 42 Wis. 248, where the Court held that, distinguished from appropriation and occupation of the soil under the water, a riparian owner upon navigable water, whether or not he owns the soil to the thread of the river or stream, has a right (unless prohibited by local law) to construct in shoal water, in front of his land, proper wharves in aid of navigation. *Delaplaine v. Railway Co.*, 42 Wis. 214, 24 Am. Rep. 386; *Chapman v. Oshkosh & M. R. Co.*, 33 Wis. 629; *Lyon v. Fishmonger Co.*, L. R. 1, Appeal Cas. 662.

⁴ *Delaplaine v. Chicago N. W. & R. Co.*, 42 Wis. 214, 24 Am. Rep. 386.

⁵ *Murry v. Sermon*, 8 N. C. (1 Hawkes) 56; *Gould on Waters*, 2d Ed., p. 331, Note 1; 12 Am. & Eng. Enc. of Law 651; *Warren v. Chambers*, 25 Ark. 120, C. S. 91 Am. Dec. 538, 4 Am. Rep. 23; *Banks v. Ogden*, 69 U. S. 2 Wall. 57, 17 L. Ed. 818.

⁶ *Smith v. City of Rochester*, 92 N. Y. 463, 44 Am. Rep. 393.

⁷ *Murry v. Sermon*, 8 N. C. (1 Hawkes) 56; *Sapp v. Frasier*, 51 L. Ann. 1718, 26 So. Rep. 378, 72 Am. St. Rep. 493; *Carr v. Moore*, 119 Iowa 152, 93 N. W. Rep. 52; 97 Am. St. Rep. 292.

not be permitted to draw off the water below its natural low water line.⁸ The same rule applies to the raising of the level of lakes and ponds to the injury of abutting owners.⁹ In the Western States it is held that riparian rights attach to lakes, ponds, or sloughs, as well as to streams and water courses.¹⁰

§ 475. Riparian rights also attach to natural lakes and ponds—Western rule.—In the Western States, holding to the common law, natural water courses or flowing streams are not the only waters to which riparian rights attach. They also attach to bodies of still or standing waters.¹ As said in a recent California case: "No authority is cited in favor of the proposition that riparian rights exist only in flowing streams. After a somewhat exhaustive search, we have not succeeded in finding any decision to that effect. That such rights exist in any body of water, whether flowing or not, is shown by the following quotations from the decisions of other States."² It may be considered as settled that, where riparian

⁸ *Fernald v. Knox Woolen Co.*, 82 Me. 48, 19 Atl. Rep. 93, 7 L. R. A. 459; *Cedar Lake Hotel Co. v. Cedar Cr. Hydraulic Co.*, 79 Wis. 297, 48 N. W. Rep. 371; *Draper v. Brown*, 115 Wis. 361, 91 N. W. Rep. 1001.

⁹ *Hebron Gravel R. Co. v. Harvey*, 90 Ind. 192, 46 Am. Rep. 199; *In re Minnetonka Lake Imp. Co.*, 56 Minn. 513, 58 N. W. Rep. 295, 45 Am. St. Rep. 494; *Baker v. Weaver*, 104 Ga. 228, 30 S. E. Rep. 726; *Coe v. Winnebago L. etc. Mfg. Co.*, 37 N. H. 254.

¹⁰ *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823.

See, also, *Foss v. Johnstone*, 158 Cal. 119, 110 Pac. Rep. 294.

¹ For lakes and ponds, see Secs. 294-299.

² *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823, citing and quoting *Farnham on Waters*,

Secs. 62, 63, pp. 278, 280, 282; *Turner v. Holland*, 65 Mich. 453, 33 N. W. Rep. 283; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, rev'g 16 Fed. Rep. 823; *Finley v. Hershey*, 41 Iowa 393; *Robinson v. Davis*, 47 App. Div. 405, 62 N. Y. Supp. 444; *Lembeck v. Nye*, 47 Ohio St. 336, 24 N. E. Rep. 686, 8 L. R. A. 578, 21 Am. St. Rep. 828; *Priewe v. Wisconsin*, 93 Wis. 534, 67 N. W. Rep. 918, 33 L. R. A. 645; *Cedar Lake Hotel Co. v. Cedar Lake Hyd. Co.*, 79 Wis. 297, 48 N. W. Rep. 371; *Valparaiso etc. Co. v. Dickover*, 17 Ind. App. 233, 46 N. E. Rep. 591; *Fernald v. Knox Woolen Co.*, 82 Me. 48, 19 Atl. Rep. 93, 7 L. R. A. 459; *Draper v. Brown*, 115 Wis. 361, 91 N. W. Rep. 1001; *Delaplaine v. Chicago etc. Co.*, 42 Wis. 214, 24 Am. Rep. 386; *Bassett v. Salisbury Co.*, 43 N. H. 569, 82 Am. Dec. 179.

rights are allowed at all, they attach to natural lakes and ponds in the same manner, and in favor of the same lands and persons as the riparian rights on the natural rivers and streams.³ Therefore further discussion upon this particular point is unnecessary here. The extent of the rights in lakes and ponds will be discussed in other portions of this work.⁴

³ See, also, for lakes and ponds, Secs. 294-299, 327.

The waters of a lake can not be either raised or lowered without making compensation to the riparian owners. *Wendel v. Spokane County*, 27 Wash. 121, 67 Pac. Rep. 576; *Priewe v. Wisconsin etc. Co.*, 93 Wis. 534, 67 N. W. Rep. 918, 33 L. R. A. 645; *Witty v. Nicollet County*, 76 Minn. 286, 79 N. W. Rep. 112; *Dressen v. Nicollet County*, 76 Minn. 290, 79 N. W. Rep. 113; *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927; *Cedar Lake Hotel Co. v. Cedar Lake Hydraulic Co.*, 79 Wis. 297, 48 N. W. 371.

See, also, *Auburn v. Union Water-Power Co.*, 90 Me. 576, 38 Atl. Rep. 561, 38 L. R. A. 188; *Fernald v. Knox Woolen Co.*, 82 Me. 48, 19 Atl. Rep. 93, 7 L. R. A. 459; *Madison v. Spokane Valley etc. Co.*, 40 Wash. 414, 82 Pac. Rep. 718, 6 L. R. A., N. S. 257; *Draper v. Brown*, 115 Wis. 361, 91 N. W. Rep. 1001; *Kalez v. Spokane etc. Co.*, 42 Wash. 43, 84 Pac. Rep. 395; *People v. Hulbert*, 131 Mich. 156, 91 N. W. Rep. 211, 64 L. R. A. 265, 100 Am. St. Rep. 588, 18 Am. Eng. Ency. of Law 135, 139.

⁴ For the appropriation of the waters of lakes, see Sec. 650.

For the ownership of the soil under lakes and ponds, see Secs. 541, 542.

CHAPTER 24.

WHO ARE RIPARIAN PROPRIETORS.

§ 476. Scope of chapter.

§ 477. The owners of the fee.

§ 478. In certain cases the owners of less than fee—In inchoate rights.

§ 479. Those entitled to the exclusive right of possession of riparian lands may use such rights.

§ 480. The United States as a riparian owner.

§ 481. A State as riparian owner.

§ 482. A municipal corporation as riparian owner.

§ 476. **Scope of chapter.**—Having discussed in the preceding chapters of this part the nature of riparian rights,¹ upon what lands such riparian rights attach,² and to what waters riparian rights attach,³ in the present chapter we will discuss as to who are entitled to riparian lands, or, in other words, who are riparian proprietors.⁴

§ 477. **The owners of the fee.**—As riparian rights are a part and parcel of the lands to which they are attached,¹ it must necessarily follow that only the owners of the fee to such lands are the absolute owners of such rights. The question as to who has the right to use riparian rights is another matter and will be discussed in a subsequent section.² As we have also discussed in a previous section,³ the ownership of the riparian rights in a natural stream depends upon the ownership of the bank or banks of the stream, and not upon the ownership of the soil over which the water flows. The ownership of the soil under the water is but one of the riparian rights which attaches by virtue of the ownership of the bank.⁴ It therefore follows that one who merely owns the soil under the

1 See Chap. 21, Secs. 451-456.

2 See Chap. 22, Secs. 457-466.

3 Secs. 468-475.

4 See Secs. 477-482.

1 For the nature of riparian rights, see Secs. 451-456.

For the lands to which riparian rights attach, see Secs. 458-466. Secs. 328, 329.

2 See Sec. 479.

3 See Sec. 451.

4 For the ownership of the soil under public or navigable waters, see Secs. 328, 329.

For that of private or non-navigable waters, see Secs. 537, 541, 542.

water is not a riparian owner or the owner of riparian rights in the stream.⁵ Hence it follows that whoever is the owner of the land, which includes the bank or banks of the stream in fee simple, is also the absolute owner of the riparian rights in and to the stream or water course or the waters flowing therein.

§ 478. In certain cases the owners of less than fee—In inchoate rights.—In certain cases the owner of an inchoate right to the bank of a stream may also be the conditional owner of the riparian rights in the stream. Such would be the case where a tract of land had been entered under some one of the land laws of the United States,¹ such as a valid homestead or other valid entry of lands which include the bank or banks of a stream in the Western States where riparian rights are allowed. Upon the fulfillment of all of the conditions by the settler, he is given a patent by the Government and he then becomes vested with all of the riparian rights in the water course and other waters flowing therein. His riparian rights will then relate back to the very inception of his title to the land, or the first step taken to acquire title to the same.² But if the settler fails to comply with the conditions prescribed by the Act of Congress, under which he seeks to acquire title to the land, the inchoate title to both the land and also to the riparian rights attached then lapses and reverts to the Government.³

Where a riparian proprietor settled upon his land while it was Indian country, but continued to reside thereon when the country was opened to settlement, and thereafter acquired title to his lands,

⁵ *United States v. Morris*, 24 Wash. Law Report 168; *Weber v. State Harbor*, 85 U. S. 18 Wall. 57, 21 L. Ed. 798; *Turner v. People's Ferry Co.*, 22 Blatchf. 272, 21 Fed. Rep. 90; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Page v. Mayor*, 10 App. Div. 294, 41 N. Y. Supp. 938.

See, however, the case of *McCarter v. Hudson Water Co.*, 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S. 197, 118 Am. St. Rep. 754, 10 Am. & Eng. Ann. Cases 116; affirmed, 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529.

¹ For the disposal of lands by the United States to individuals, see Secs. 332-441.

² For the Doctrine of Relation, see Secs. 742-756.

For the rights of appropriators as against settlers, see Secs. 810-823.

Rights to land attach when, see Sec. 445.

³ For the Government as a riparian owner, see Sec. 480.

The right of a pre-emptor of such lands bordering on a stream, to use the water of said stream as riparian owner, is rendered worthless by the claimant's abandonment before pro-

such title would relate back to the date of the opening and his riparian rights date from that event.⁴ The owner of a mining claim, located in accordance with the laws of Congress providing for such locations, has also inchoate right to the waters of the stream adjoining which his lands lie, which right becomes absolute upon his obtaining his patent to the mining claim from the Government, but upon the abandonment of such claim his rights to both the land and riparian rights are forfeited.⁵ A mere trespasser upon the lands, either upon those of the United States, of a State, or individuals, acquires no right or ownership to the riparian rights in and to a stream which may adjoin such lands.⁶ But a distinction must be made in the case of settlers upon the unsurveyed public lands of the United States, who have settled upon such lands with the *bona fide* intention that, upon the land being surveyed, they will make entry in the land office for the same. This class of settlers are protected by the statute upon their making the proper entry for the land, within the time limited by the statute after such lands shall have been surveyed.⁷ However, even this class of

curing the receiver's receipt for the same. *Conklin v. Pacific Improvement Co.*, 87 Cal. 296, 25 Pac. Rep. 399.

⁴ *Redwater Land & Cattle Co. v. Reed*, 26 S. D. 466, 128 N. W. Rep. 702.

⁵ *Crandall v. Woods*, 8 Cal. 136, 1 Morr. Min. Rep. 604, in which it is said: "One who locates upon public lands with a view of appropriating them to his own use, becomes the absolute owner thereof as against every one but the Government, and is entitled to all the privileges and incidents which appertain to the soil, subject to the single exception of rights antecedently acquired. He may admit that he is not the owner in fee, but his possession will be sufficient to protect him as against trespassers."

⁶ *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217.

In the State of Washington it is held that persons holding a possessory

right to land abutting on a natural stream shall be entitled to use any water not otherwise appropriated for irrigation, etc., and is declaratory of the then existing law, that title acquired through patent from the United States relates back to the date of the settlement or filing, but does not authorize a mere trespasser or squatter of public land who subsequently sells or abandons his claim to acquire riparian right to a stream flowing through the land; for the reason that riparian rights are a mere incident to ownership in the soil and do not vest until the patent is issued. *Kendall v. Joyce*, 48 Wash. 489, 93 Pac. Rep. 1091.

⁷ See Secs. 445, 815-817.

In a recent case in California it was held that one in possession of unsurveyed public lands with intent to procure title thereto, is the owner of the lands within the articles of incorporation of a corporation organized

settlers have no rights in and to the lands upon which they have settled, or to the water adjoining the same, which they can assert against the Government where it reserves the land from entry for some special purpose.⁸

The same rule also applies to State lands. The disposition of State lands is entirely in the control of the legislature, which may withdraw or reserve from State sale any part of the same. As was said in a recent case in California,⁹ after reviewing the decisions upon the subject: "The effect of these decisions is to put the applicant for the purchase of State lands in a position similar to that of one who enters Federal lands under the pre-emption laws of the United States. Under those laws it was uniformly held that no right, as against the United States, vested in a claimant until he had made or tendered the required payment. Up to that time the land might be withdrawn from sale."

§ 479. Those entitled to the exclusive right of possession of riparian lands may use such rights.—As to the use of riparian rights, such as the right to the use of water in general, it may be said that any person entitled to the exclusive right to possess and

to secure a supply of water for irrigation purposes and to distribute the same among its stockholders for use on land owned by them. The Court said: "We are of the opinion that, upon the facts alleged, the plaintiff must be held to be the owner of the land for which he desires water, within the meaning and intent of the articles of incorporation. The absolute ownership thereof is, of course, in the United States; but the plaintiff is in the undisputed possession thereof, having settled upon the same with intent to procure a Government title when it can be obtained, and he is deemed the owner and entitled to maintain his possession and use of the land as against all except the Government, or some one hereafter deriving title from the Government." *Miller v. Imperial Water Co.* No. 8,

156 Cal. 27, 103 Pac. Rep. 227, 24 L. R. A., N. S. 27.

See, also, *Silver Creek & Panoche Land & Water Co. v. Hayes*, 113 Cal. 142, 45 Pac. 191; *Page v. Fowler*, 37 Cal. 110; *Doran v. Central Pacific R. Co.*, 24 Cal. 245.

⁸ *United States v. Hansen*, 167 Fed. Rep. 881; *Messenger v. Kingsbury*, 158 Cal. 611, 112 Pac. Rep. 65; *People v. Sherer*, 30 Cal. 645; *Hutton v. Frisbie*, 37 Cal. 475; *Frisbie v. Whitney*, 76 U. S. 9 Wall. 187, 19 L. Ed. 668, *Yosemite Valley Case*, 82 U. S. 15 Wall. 77, 21 L. Ed. 82; *Low v. Hutchings*, 41 Cal. 634; affirmed, 5 Wall. 77 (U. S.), 21 L. Ed. 82; *Whitney v. Taylor*, 158 U. S. 85, 39 L. Ed. 906, 15 Sup. Ct. Rep. 796; *Penny v. McConnaughy*, 140 U. S. 35 L. Ed. 363, 11 Sup. Ct. Rep. 699.

⁹ *Messenger v. Kingsbury*, 158 Cal. 611, 112 Pac. Rep. 65.

enjoy the banks, is entitled to use the riparian rights, although he does not own the fee.¹ Such would be the case of a lessee of the land to which the riparian rights were attached, where he is simply holding under his lease and does not own the title to the land. The title to the land in such a case and also the riparian rights attached thereto remain in the owner of the fee.² In a California case it was said: "The estate of the plaintiffs is sufficient to enable them to maintain this action. They were lessees for a term of ten years with the privilege of purchasing during that time."³

§ 480. **The United States as a riparian owner.**—By the Louisiana Purchase and the Treaty of Guadalupe Hidalgo,¹ the United States acquired vast tracts of unoccupied lands, through which many of the rivers and smaller streams flow, and within which there were many natural lakes and ponds. There is no question, except as to those lands and waters which had been granted by the predecessors of this Government to individuals, but that prior to the settlement of these lands, the United States was the owner of both the lands and the waters of this portion of the country. The United States having adopted the common law as governing the waters of the country prior to these treaties, and at this period being the owner of both the sides and the beds of these waters, the Government became what is known as the sole riparian owner of these lands, and the waters flowing through the same. This riparian ownership of the Government was recognized by the early California decisions during the formative period of the doctrine of appropriation hereinafter discussed.² In one case it was said:³ "If the Government, which in this instance is the riparian proprietor, had granted to the defendants the right to divert from the creek a given quantity of water, without restriction as to the place of diversion, it is clear that the right could be exercised at any point on the stream, though the effect of the grant would not have been to

¹ *Hanford v. St. Paul etc. R. Co.*, 43 Minn. 104, 42 N. W. Rep. 596, 44 N. W. Rep. 1144, 7 L. R. A. 722.

² See Secs. 624-631.

³ *Heilbron v. Fowler Switch Canal Co.*, 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183.

See, also, *Kalez v. Spokane Valley*

Land and Water Co., 42 Wash. 43, 84 Pac. Rep. 395.

¹ See Secs. 394, 397, 399.

² For the history of the Arid Region doctrine of appropriation, see Chap. 32, Secs. 595-626.

³ *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571.

convey any property in the *corpus* of the water, for no such property is vested in the Government."⁴

But these lands were finally opened up for settlement,⁵ and the General Government relinquished its right to much of the waters flowing over the public domain, to be used by appropriators of the same for beneficial purposes.⁶ It also relinquished the government and control of the waters within the boundaries of a State upon its admission to the Union.⁷ But there are certain rights which the Government as the owner never relinquished to the individual settlers or to the States. These are: First, the right to continue unimpaired the navigable capacity of all of the navigable waters of the United States, regardless of any individual appropriation or diversion of the waters, or the rule of law adopted by any State.⁸ Second, the right of the United States, as the owner of lands bordering on a stream or other body of water, to continue the flow of the waters; so far, at least, as may be necessary for the beneficial uses of the Government property.⁹ In fact it is somewhat indefinite as to just what the Government now claims or may claim in the future under the second subject, but the language of the Supreme Court of the United States in the Rio Grande Dam and Kansas v. Colorado cases intimates, at least, that the Government has a right to the flow of the waters so far as may be necessary for the *beneficial uses* of the Government property, not by virtue of its riparian rights, but by virtue of appropriations or reservations for "bene-

⁴ See, also, *Spencer v. Winselman*, 42 Cal. 479, 2 Morr. Min. Rep. 334; *Merritt v. Judd*, 14 Cal. 64, 6 Morr. Min. Rep. 62; *Hughes v. Devlin*, 23 Cal. 501, 12 Morr. Min. Rep. 241; *Kendall v. Joyce*, 48 Wash. 489, 93 Pac. Rep. 1091; *Sturr v. Beck*, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350, affirming *Id.*, 6 Dak. 71, 50 N. W. Rep. 486; *Cottonwood Ditch Co. v. Thom*, 39 Mont. 115, 101 Pac. Rep. 825, 104 Pac. Rep. 281.

That the Government is the owner of the lands and waters upon the public domain with the absolute power of disposal, see Secs. 409-411.

⁵ As to how the lands were settled, see Secs. 433-446.

⁶ For relinquishment by the Government of waters, see Secs. 611-626.

⁷ See Secs. 624, 625.

⁸ For right of navigation, see Chap. 16, Secs. 342-357.

For the dedication of the waters to a State, see Secs. 373-389.

⁹ As to what uses the water may be put, see Secs. 690-705.

See, also; *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Id.*, 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Id.*, 184 U. S. 416, 46 L. Ed. 619.

ficial uses." And in two cases the Courts have held that the Government had a preference right to the use of the water flowing through Government lands for these purposes, and that, too, when individuals were claiming the water for the same purposes.¹⁰

As far as the riparian rights of the Government are concerned, as we view the subject, the Government has no further or exclusive rights than an individual upon the same stream would have, and therefore the same rules govern between the Government and an individual as between individuals. Otherwise the common law upon this subject would not be followed. So, if a stream flows over the public land upon which there are also settlers, the water of the stream may be taken and used by the Government for any purpose, provided the rights of the riparian owners are not injured. This has also been the holding of the Courts.¹¹ The power of the Government to make reservations of its lands and waters has been discussed in previous sections.¹²

§ 481. A State as riparian owner.—A State may also be a riparian owner on streams which flow through or by lands owned by the State. But its rights in this respect are no greater than those of the individual owners upon the same stream. Otherwise the common law would be extended. To be sure the State has the sole jurisdiction of the waters flowing within its boundaries. It may dedicate all of its waters to the State, or to the public; and may make such laws governing the same as it sees fit so long as those laws do not conflict with the rights of the United States, as discussed

¹⁰ *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207, affirming *Id.*, 148 Fed. Rep. 684, 78 C. C. A. 546, sustaining *Id.*, 143 Fed. Rep. 740, 74 C. C. A. 666; *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662.

See, also, effect of dedication by a State of its waters to the State as against the Government, Sec. 388.

¹¹ See *Nevada Ditch Co. v. Bennett*, 30 Ore. 59, 45 Pac. Rep. 472, 60 Am. St. Rep. 777; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep.

674; *Union Mill & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Vansickle v. Haines*, 7 Nev. 249, 15 Morr. Min. Rep. 201; *Farm Investment Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

¹² For the authority of the Government to make reservations, see Secs. 413, 414, 448.

For effect of the dedication of waters by a State as against the rights of the United States, see Sec. 388.

in previous sections.¹ But where the State owns lands bordering upon waters, and where it claims certain rights in the waters by virtue of the common-law theory of riparian ownership, it can claim no further rights than are accorded to the individual under the same law. So the taking of lands, through which certain streams run, by a State for park purposes, gives to the State under the common law no further rights than the individuals whose lands touch upon the same streams have.² Neither do riparian rights extend so as to authorize a State to supply with water from a stream a sufficient amount for its penitentiary and insane asylum, where from 1300 to 1500 people are kept in confinement, and where one of such institutions is situated a considerable distance from the stream.³ But where the State has sold lands upon which riparian rights had previously attached, it is held that the grantees were also entitled to the same rights.⁴

§ 482. A municipal corporation as riparian owner.—A municipal corporation under the common law may also be a riparian owner upon a stream or other body of water, but only as to the lands actually owned by it. Riparian rights are strictly limited to the lands or lots which front on the water. If these are owned by the city, the city has the riparian rights incident to the lots; however, if the lots are owned by individuals, they alone are entitled to the riparian rights. Hence it follows that a municipal corporation can not, as a riparian proprietor, claim the right to supply the needs of all its inhabitants from a stream, upon the ground that the stream flows by the city. As a riparian owner the city can not claim a greater or more extensive right to the waters of a stream which washes by it, than the other riparian owners upon the same stream.¹ The right of a municipality to take the water from a

¹ See Sec. 480.

² *Proprietors of Mills v. Commonwealth*, 164 Mass. 227, 41 N. E. Rep. 280.

³ *Salem Flouring Mills Co. v. Lord*, 42 Ore. 82, 69 Pac. Rep. 1033, 70 Pac. Rep. 832.

See, also, *Dudden v. Clutton Union Guardians of the Poor*, 38 Eng. L. & Eq. 526, 1 Hurlst. (H. & N.) & N. 627, 26 L. J. Exch. N. S. 146; *Mc-*

Carter v. Hudson etc. Co., 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S. 197, 118 Am. St. Rep. 754, 10 Am. & Eng. Cases 116, affirmed in 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529.

⁴ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

¹ *Haupt*, Appeal of, 125 Pa. 211, 17 Atl. Rep. 436, 58 L. R. A. 637; *Emporia v. Soden*, 25 Kan. 588, 37 Am.

stream flowing through or by the same is based upon entirely different considerations than those which govern its rights as a riparian owner.² As we shall see in a future portion of this work, this right may be acquired by purchase, by long continued custom, by the right of eminent domain, and in the Western States by appropriation and diversion for municipal purposes. However, if a city is the owner of riparian rights, it has the right to exercise the use of them, having due regard to the correlative rights of the other riparian owners upon the stream. And equity will enjoin a municipal corporation from taking a water supply from a stream to the injury of the lower riparian proprietors.³

In an Ohio case, however, it is held that an incorporated municipality situated upon a natural flowing stream is, in its corporate capacity, a riparian proprietor and has the right to use out of such stream all the water it needs for its own proper purposes, and that

Rep. 265; *Ex parte Jennings*, 6 Cow. 518, 16 Am. Dec. 447, rev'd, 5 Wend. 423; *Stein v. Burden*, 24 Ala. 130, 60 Am. Dec. 453; *Id.*, 27 Ala. 104; *Id.*, 29 Ala. 127, 65 Am. Dec. 394; *Harding v. Stamford W. Co.*, 41 Conn. 87; *Rigney v. Tacoma Light & W. Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425; *New Whateom v. Fairhaven Land Co.*, 24 Wash. 493, 64 Pac. Rep. 735, 54 L. R. A. 190; *Lord v. Meadville W. Co.*, 135 Pa. 122, 19 Atl. Rep. 1007, 8 L. R. A. 202, 20 Am. St. Rep. 864; *Company of Proprietors etc. v. Romney*, 9 C. B. N. S. 575, 99 Eng. C. L. 57; *Bare v. Hoffman*, 79 Pa. 71, 21 Am. Rep. 42; *Ulbricht v. Eufaula W. Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72; *Swindon Waterworks Co. v. Wilts etc. Canal Co.*, L. R. 7 H. L. 697, 45 L. J. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 284; *Gallagher v. Kingston W. Co.*, 25 App. Div. 82, 49 N. Y. Supp. 250; affirmed, 164 N. Y. 602, 58 N. E. 1087; *Pine v. New York*, 103 Fed. Rep. 337; *Leonard v. Rutland*, 66 Vt. 105, 28 Atl. Rep. 835;

Sparks Mfg. Co. v. Newton, 57 N. J. Eq. 367, 41 Atl. Rep. 385; *Barre W. Co. v. Carnes*, 65 Vt. 626, 27 Atl. Rep. 609, 21 L. R. A. 769, 36 Am. St. Rep. 891; *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. Rep. 780, 33 L. R. A. 376, 53 Am. St. Rep. 262; *Schenectady v. Furman*, 61 Hun, 171, 15 N. Y. Supp. 724; *Stauffer v. East Stroudsburg Borough*, 215 Pa. 144, 64 Atl. Rep. 411; *Los Angeles v. Los Angeles Water Co.*, 124 Cal. 328, 57 Pac. Rep. 211, 571.

² Right for municipal corporations to take the water from the streams, see Chap. 71.

³ *Higgins v. Flemington W. Co.*, 36 N. J. Eq. 538; *Burden v. Stein*, 27 Ala. 104, 62 Am. Dec. 758; *Lonsdale v. Woonsocket*, 21 R. I. 498, 44 Atl. Rep. 929; *Pine v. New York*, 103 Fed. Rep. 337; but see *Id.*, 185 U. S. 93, 46 L. Ed. 820, 22 Sup. Ct. Rep. 592, where the Court held that where there had been laches upon the part of the riparian owners the damages might be ascertained and a decree issued for the payment of the same, with injunction in the alternative.

a lower proprietor who uses the water for power has no legal cause for complaint. This case was decided upon the theory that the city was a riparian owner regardless of the actual ownership of land bordering upon the stream, and is against the weight of authority.⁴

⁴ *Canton v. Shock*, 66 Ohio 19, 63 N. E. Rep. 600, 58 L. R. A. 637, 90 Am. St. Rep. 557. Compare cases cited in the first note of this section, *supra*.

CHAPTER 25.

RIGHT TO THE USE OF WATERS.

- § 483. Scope of chapter.
- § 484. The relative rights of owners on the same stream.
- § 485. The relative rights of owners on the same stream—Mr. Justice Story's opinion.
- § 486. Classification of uses under the common law.
- § 487. "Natural uses" and "artificial uses" distinguished.
- § 488. The use for natural wants may be extraordinary.
- § 489. The use of water for "artificial wants" must be reasonable.
- § 490. Reasonable use defined.
- § 491. The use of water by diversion an extraordinary one.
- § 492. What is a reasonable use for power purposes.
- § 493. What is a reasonable use in cutting ice.
- § 494. The manner of taking the water must be reasonable.
- § 495. The manner of the use must be reasonable.
- § 496. All surplus water must be returned to the stream after use.
- § 497. No priority of right at common law.

§ 483. **Scope of chapter.**—Having discussed in the preceding chapters of this part the nature of riparian rights,¹ upon what lands riparian rights attach,² to what waters riparian rights attach,³ and who are riparian proprietors,⁴ under the doctrine of the common law of riparian rights, in the present chapter we will discuss the right of riparian proprietors to the use of waters flowing by or through their lands under the rule of the common law. The discussion in this chapter will not include the right of riparian proprietors to use the waters of streams for the purpose of irrigating their riparian lands, except as that subject may be incidentally referred to. The right to use waters for irrigation will be discussed in a separate chapter herein, entitled "Irrigation as a Riparian Right."⁵

§ 484. **The relative rights of owners on the same stream.**—As we have seen in previous sections,¹ a riparian proprietor has no

1 See Chap. 21, Secs. 450-456.

2 See Chap. 22, Secs. 457-466.

3 See Chap. 23, Secs. 467-475.

4 See Chap. 24, Secs. 476-482.

5 See Chap. 26, Secs. 498-525.

1 See Sec. 455. See, also, Secs. 288, 289.

ownership in the water itself, running in a natural stream, except as to his usufructuary property thereto. The right of a riparian owner to use the water of a water course flowing by his land, may be divided into two classes. First, the ordinary use of the water; and second, the extraordinary use. These uses are based upon what are called the natural and artificial wants of man. Water used to supply man's natural wants is an "ordinary use," and to supply man's artificial wants is an "extraordinary use." The real difference pointed out by the authorities between these two classes of uses, is that under the first water may be used for ordinary purposes without regard to the effects of such use in case of a deficiency to those below on the stream, while in reference to the extraordinary uses, the effect upon those below must always be considered in determining its reasonableness. As, for example, for domestic uses the entire stream may be consumed, but for all other uses it depends upon the reasonable use based upon the correlative rights of the other owners on the stream. In the English case of *Miner v. Gilmour*,² Lord Kingsdown said: "By the general law, applicable to riparian proprietors, each has a right to what may be called the ordinary right of a use of water flowing past his land—for instance, to the reasonable use of the water for domestic purposes, and for his cattle, and this without regard to the effect that such use may have in case of deficiency upon the proprietors lower down the stream. But further, he may have use of it for any purpose or what may be deemed the extraordinary use of it, provided he does not thereby interfere with the lawful use of it by other proprietors, either above or below him." Subject to this condition a riparian proprietor may dam up a stream for the purpose of a mill, or divert the water for the purpose of irrigation. But he has no right to interrupt the regular flow of the stream, if he thereby interferes with the lawful use of water by other proprietors, and inflicts on them a sensible injury.³ So, in this country, the rule is, that riparian proprietors have an equal

² 12 Moore P. C. C. 131, 4 Week. Rep. 328, 3 L. R. N. S. 98.

³ See, also, Gould on Waters, Secs. 205-210; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Evans v. Merriweather*, 3 Scam. (Ill.) 492, 38 Am. Dec. 106; *Weiss v. Oregon Iron & Steel Co.*, 13 Ore. 496, 11

Pac. Rep. 255; *Shury v. Piggott*, 3 Bulst. 339, Popham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280; *Dudden v. Clutton Union*, 1 Hurlst & N. 627, 26 L. J. Exch. N. S. 146, 38 Eng. L. & Eq. 526; *Mostyn v. Atherton*, 2 Ch. 360, 81 L. T. N. S. 356.

or correlative right to the use of the water, and the right of each qualifies that of all the others; the question between them is whether the use made of the water by one is reasonable and consistent with a correspondent use by the rest.⁴

The common law does not deprive the riparian owners of the right to use the waters of the streams which run through or by their land, but it allows all to use the water in any manner not incompatible with the equal or correlative rights of all of the other owners upon the same stream. As was said by Mr. Justice Nelson in *Howard v. Ingersoll*:⁵ "Streams of water are intended for the use and comfort of man, and it would be unreasonable and contrary to the universal sense of mankind to debar a riparian proprietor from the application of water to domestic, agricultural, and manufacturing purposes, provided the use works no substantial injury to others."⁶ This right to the use of the water necessarily implies a right to exercise a certain degree of control over the water, and to some extent to diminish its volume. Therefore, when it is said that a riparian proprietor has the right to have the stream continue

⁴ *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Hendricks v. Johnson* (Ala.), 6 Port. 472; *Moffett v. Brewer*, 1 G. Greene (Iowa) 348; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Dumont v. Kellogg*, 29 Mich. 420, 18 Am. Rep. 102; *Woodin v. Wentworth*, 57 Mich. 278, 23 N. W. Rep. 813; *Holden v. Winnipiseogee Lake Cot. & W. Mfg. Co.*, 53 N. H. 552; *Hough v. Doylestown*, 4 Brewst. 333; *Ulbricht v. Eufalia W. Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72; *Wadsworth v. Tillotson*, 15 Conn. 366, 39 Am. Dec. 391; *Shook v. Colohan*, 12 Ore. 239, 6 Pac. Rep. 503; *Brown v. Gold Coin M. Co.*, 48 Ore. 277, 86 Pac. Rep. 361; *Mason v. Cotton*, 2 McCrary 82, 4 Fed. Rep. 792.

A riparian proprietor can not, by mere priority of use, acquire an exclusive right to the water of a stream. *Bliss v. Kennedy*, 43 Ill. 67.

See, also, *Gillis v. Chase*, 67 N. H. 161, 31 Atl. Rep. 18, 68 Am. St. Rep. 645; *Brown v. Bowen*, 30 N. Y. 519, 86 Am. Dec. 406; *Standen v. New Rochelle W. Co.*, 91 Hun, 272, 36 N. Y. Supp. 92; *Williamson v. Lock's Creek Canal Co.*, 78 N. C. 156; *Wheatley v. Chrisman*, 24 Pa. (12 Harris) 298, 64 Am. Dec. 657, 11 Morr. Min. Rep. 24; *Chatfield v. Wilson*, 31 Vt. 358; *Id.*, 28 Vt. 49; *Id.*, 27 Vt. 670; *West v. Fox River Paper Co.*, 82 Wis. 647, 52 N. W. Rep. 803; *Pugh v. Wheeler*, 19 N. C., 2 Dev. & B. 50; *Pratt v. Lamson*, 2 Allen (Mass.) 287; *Roberts v. Claremount County*, 74 N. H. 217, 66 Atl. Rep. 485, 24 Am. St. Rep. 962.

⁵ 54 U. S. 13 How. 381, 14 L. Ed. 189, 17 Ala. N. S. 780, reversed.

⁶ See, also, for the right to use the water for natural and artificial purposes, Secs. 486-496.

through his land as it was wont to flow by Nature, it is not intended to be said that he has the right to all the water that naturally flows in the stream, for that would render the stream, which belongs to all the proprietors, of no use to any.⁷

The general principles of law which govern the rights of the upper and lower riparian owners are well settled and the upper riparian owner has no more right, nor can he use the water to any greater extent, than the lower riparian owner upon the same stream.⁸ In the Western part of this country, which still adheres to the common law of riparian rights, the same rule has been adopted as to the relative rights of the riparian owners to the use of the waters of the same stream adjoining the lands, and which rights extended to all portions of the flow of the stream, subterranean as well as surface. As was held in the recent California case of *Hudson v. Dailey*,⁹ to the effect that the application of the principle should be made to the case of percolating waters feeding the stream and necessary to its continued flow, the Court saying: "There is no rational ground for any distinction between such percolating waters and the waters in the gravels immediately beneath and directly supporting the surface flow, and no reason for applying a different rule to the two classes with respect to such rights, if, indeed, the two classes can be distinguished at all. Such waters, together with the surface stream supplied by them, should be considered a common supply, in which all who by their natural situation have access to it have a common right, and of which they may each make a reasonable use upon the land so situated, taking it either from the surface flow or directly from the percolations beneath their lands. The natural rights of these defendants and the plaintiff in this common supply of water would therefore be coequal, except as to quantity, and correlative."¹⁰

⁷ *Vansickle v. Haines*, 7 Nev. 249; *Davis v. Getchell*, 50 Me. 602, 79 Am. Dec. 636.

⁸ *Mostyn v. Atherton*, 2 Ch. 630, 81 L. T. N. S. 356; *Dudden v. Clutton Union*, 26 L. J. Exch. N. S. 146, 1 Hurlst. & N. 627, 38 Eng. L. & Eq. 526; *Nielson v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *Barneich v. Mercy*, 136 Cal. 205,

68 Pac. Rep. 589; *Geddis v. Parrish*, 1 Wash. 587, 21 Pac. Rep. 314.

⁹ 156 Cal. 617, 105 Pac. Rep. 748.

¹⁰ See, also, *Crawford v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Union Mill & Mining Co. v. Dangberg*, 81 Fed. 73; *Id.*, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; *Charnock v. Higuerra*,

§ 485. The relative rights of owners on the same stream—**Mr. Justice Story's opinion.**—The rules of the common law as to the use of riparian waters, as we have said, are well settled, and the only difficulty which arises is in the application of the rules to the facts which may surround each particular case. The principles governing this use can never be better stated than it was by Mr. Justice Story in the early case of *Tyler v. Wilkinson*,¹ abstracts of which opinion are so often quoted upon different phases of the subject under consideration. We can do not better here than to quote a portion of that opinion: "*Prima facie* every proprietor upon each bank of a river is entitled to the land covered with water, in front of his bank, to the middle thread of the stream, or, as it is commonly expressed, *usque flum aquae*. In virtue of this ownership he has a right to the use of the water flowing over it in its natural current, without diminution or obstruction. But, strictly speaking, he has no property in the water itself, but a simple use of it while it passes along. The consequence of this principle is, that no proprietor has a right to use the water to the prejudice of another. It is wholly immaterial whether the party be a proprietor above or below in the course of the river; the right being common to all the proprietors on the river, no one has a right to diminish the quantity which will, according to the natural current, flow to a proprietor below, or to throw it back upon a proprietor above. This is the necessary result of the perfect equality of right among all the proprietors of that which is common to all. The natural stream, existing by the bounty of Providence for the benefit of the land through which it flows, is an incident annexed, by operation of law, to the land itself. When I speak of this common right, I do not mean to be understood as holding the doctrine that there can be no diminution whatsoever, and no obstruction or impediment whatsoever, by a riparian proprietor, in the use of the water as it flows, for that would be to deny any valuable use of it. There may be, and there must be, allowed of that which is common to all, a reasonable use. The true test of the principle

111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195; *Senior v. Anderson*, 138 Cal. 716, 72 Pac. Rep. 349; *Id.*, 130 Cal. 290, 62 Pac. Rep. 563; *Id.*, 115 Cal. 496, 47 Pac. Rep. 454; *Anaheim Water Co.*

v. Semi-Tropic Water Co., 64 Cal. 185, 30 Pac. Rep. 623; *Lone Tree Ditch Co. v. Cyclone Ditch Co.*, 15 S. D. 519, 91 N. W. Rep. 352; *Id.*, 26 S. D. 307, 128 N. W. Rep. 596.

14 Mason 397, Fed. Cas. No. 14,312.

and extent of the use is, whether it is to the injury of the other proprietors or not. There may be a diminution in quantity, or a retardation, or acceleration of the natural current indispensable for the general and valuable use of the water, perfectly consistent with the existence of the common right. The diminution, retardation, or acceleration, not positively and sensibly injurious by diminishing the value of the common right, is an implied element in the right of using the stream at all. The law here, as in many other cases, acts with a reasonable reference to public convenience and general good, and is not betrayed into a narrow strictness, subversive of common sense, nor into an extravagant looseness which would destroy private rights. The maxim is applied, *sic itere tuo, ut non alienum laedas*. . . .

“These are the general principles which appear to me applicable to the present case. They will be found recognized in many cases, but are in none more fully and accurately weighed and discussed than in” the following cases.²

“With these principles in view, the general rights of the plaintiffs can not admit of much controversy. They are riparian proprietors and, as such, are entitled to the natural flow of the river without diminution to their injury.”

§ 486. Classification of uses under the common law.—Under the common law there are three classes of uses which the riparian proprietors may or may not make of the waters of a stream flowing by their lands. These are: First, natural or primary uses for which any riparian proprietor may take the waters of the whole stream;¹ second, artificial uses or uses which are not classified as those for natural wants;² and, third, uses of the water which may

² Citing, *Bealey v. Shaw*, 6 East 208, 2 Smith 321, 102 Eng. Reprint 1266; *Williams v. Moreland*, 2 Barn. & Cresw. 910, 107 Eng. Reprint 620; *Wright v. Howard*, 1 Simon & Stuart 190, in England, 1 L. J. C. H. 94, 24 Rev. Rep. 169; *Ingraham v. Hutchinson*, 2 Conn. R. 584; *Merritt v. Parker*, 1 Coxe (N. J.) 460; *Palmer v. Muligan*, 3 Caine's R. 308, 2 Am. Dec.

270; *Platt v. Johnson*, 15 Johns. R. (N Y.) 213, 8 Am. Dec. 233; *Merritt v. Brinkerhoof*, 17 Johns. R. 306, in America.

¹ For natural uses, see Secs. 487, 488.

² For artificial uses, see Sec. 489.

See, also, irrigation as a riparian right, Chap. 26, Secs. 498-525.

not be made at all; such, for example, would be the use of water by a riparian owner upon nonriparian lands.³

The first two classes will be discussed in the following sections of this chapter,⁴ but the third class applies more to the subject of irrigation and will be discussed under the chapter on Irrigation as a Riparian Right.⁵

§ 487. “Natural uses” and “artificial uses” distinguished.—The classification made in the preceding section,¹ although followed by some of the earlier common law cases, even under the development of the common law of riparian rights, is somewhat fanciful. “Natural uses” or the uses for “natural wants” as variously defined by the authorities mean those uses of water which are based upon the immediate necessities of the case, such as those uses which must be immediate in order to sustain life.² “Everything, as it serveth more immediately or more nearly for food and use of man (as shall be said hereafter) hath the precedent dignity before any others.”³ And as to these uses it is generally held that one owner may consume the entire flow of the stream regardless of the rights of the other proprietors upon the same stream.⁴ Therefore the words “natural” and “necessary” seem,

³ That the use must be upon riparian lands, see Secs. 457-466, 514-517.

See, also, *McCartney v. Londonderry Railway*, App. Cas. 1904, p. 301; *Lawrie v. Silsby*, 82 Vt. 505, 74 Atl. Rep. 94; *Evans v. Merriweather*, 3 Scam. (Ill.) 492, 38 Am. Dec. 106; *Wiggins v. Muscupiabe Land & Water Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Lone Tree Ditch Co. v. Cyclone Ditch Co.*, 26 S. D. 307, 128 N. W. Rep. 596; *Id.*, 15 S. D. 519, 91 N. W. Rep. 352; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁴ See Secs. 487-497.

⁵ See Secs. 498-525.

¹ See Sec. 486.

² See *Rylands v. Fletcher*, L. R. 3 H. L. 330.

³ Lord Coke, speaking in regard to waters, Coke on Littleton, Book 1,

Chap. 1, Sec. 1, 4a; *Shury v. Piggot*, 3 Bulst. 339, Popham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280, where it is said: “It is also a thing of necessity for the watering of cattle.”

⁴ That the use of water for natural wants may be extraordinary, see Sec. 488.

But in one English case it was held that the question whether the amount of water taken from a stream for use in a house is wrongful, depends upon its quantity in relation to that which remained in the stream, and is for the jury. *Norbury v. Kitchin*, 9 Jur. N. S. 132, 7 L. T. N. S. 685.

See, also, *Hough v. Porter*, 51 Ore. 318, 372, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728; *Hazeltine v. Case*, 46 Wis. 391, 1 N. W. Rep. 66, 32 Am. Rep. 715; *Kimball v.*

when used by the early English authorities in this connection, to be practically synonymous; while upon the other hand "artificial uses" or uses for "artificial wants" are those uses which do not depend so much upon the immediate necessities of this case as upon the question of business, profit, pleasure, or comfort. Therefore, under these authorities, the right of the use of water for irrigation is considered an artificial and not a natural use.⁵ As was well defined by the South Dakota Court in a recent case: "These rights of riparian owners have at all times been divided into two classes, dependent upon the use to which the water is to be put, which uses have been variously denominated 'ordinary' or 'extraordinary' and 'natural' or 'artificial.' The so-called ordinary or natural use includes the use of the water for domestic purposes and for watering stock. The extraordinary or artificial use includes manufacturing, mining and irrigation. A wide difference in the nature of these two classes of use for water will be readily recognized. The one use is directly necessary to the preservation of animal life; the other, at best, but indirectly needful. From this difference in the inherent nature or purpose of the two uses has grown a wide difference in the rules applicable to the two."⁶

As stated before, the old common law classification is fanciful, and it is now practically obsolete, the question being left to that of the reasonable use of the water by the riparian proprietors, in all cases, rather than to an attempted arbitrary classification. Under these old authorities, the use of the water for irrigation not being considered a natural use of the water, it was held that such use could only be reasonable as compared with the rights of all riparian proprietors upon the same stream. But in a hot, dry, and arid country, where the use of water for irrigation is an absolute necessity in order to raise any crops, it can be readily seen that the use merges from what is strictly known under the common law classification as an "artificial use" into a "natural use," or one upon which the immediate necessities of life depend. Therefore, the

Northeast Harbor Co., 107 Me. 467, 78 Atl. Rep. 865, 32 L. R. A., N. S. 805; Frederick v. Bognor W. Co., 78 L. J. Ch. 40, 72 J. P. 501, 25 T. L. R. 31; Bristol W. Co. v. Uren, 15 Q. B. D. 637, 52 L. T. 655.

⁵ See Irrigation as a Riparian Right, Secs. 498-525.

⁶ Lone Tree Ditch Co. v. Cyclone Ditch Co., 26 S. D. 307, 128 N. W. Rep. 596.

See for former opinion in the same case, 15 S. D. 519, 91 N. W. Rep. 352.

authorities are generally drifting toward the common proposition that any use of the water of the stream by a riparian proprietor must depend upon reason or a reasonable use, after taking into consideration all of the facts and circumstances surrounding each particular case, and that, too, whether the uses are for strictly domestic purposes or whether the uses are for the irrigation of land, the development of power, or the many other uses which are made of the waters of the streams. As was said in the case of *Brown v. Collins*,⁷ in disapproving of the opinion of Lord Cairns in the case of *Rylands v. Fletcher*:⁸ “The distinction made . . . between a natural and a nonnatural use of land, if he meant anything more than the difference between a reasonable use and an unreasonable one, is not established in the law. Even if the arbitrary test were applied only to things which a man brings on his land, it would still recognize the peculiar rights of savage life in the wilderness, ignore the rights growing out of a civilized state of society, and make a distinction not warranted by the enlightened spirit of the common law; it would impose a penalty upon efforts, made in a reasonable, skillful, and careful manner, to rise above a condition of barbarism. It is impossible that legal principles can throw so serious an obstacle in the way of progress and improvement. Natural rights, are, in general, legal rights; and the rights of civilization are, in a legal sense, as natural as any others. ‘Most of the rights of property, as well as of person, in the social state, are not absolute but relative.’ ”⁹ And in *Lux v. Haggin*,¹⁰ it was said, relative to the common law classification: “The distinction between natural and artificial wants would be, under supposable conditions, somewhat fanciful.”

In *Harris v. Harrison*,¹¹ it is said that: “According to the common law doctrine of riparian ownership as generally declared in England and in most American States, upon the facts in the case at bar the plaintiffs would be entitled to have the waters of Harrison Canyon continue to flow to and upon their land as they were naturally accustomed to flow, without any substantial deterioration in quality or diminution in quantity. But in some of the Western and

⁷ 63 N. H. 442, 16 Am. Rep. 372.

⁸ L. R. 3 H. L. 330.

⁹ Quoting *Losee v. Buchanan*, 51 N.

Y. 476, 10 Am. Rep. 623.

¹⁰ 69 Cal. 255, 4 Pac. Rep. 919; 10 Pac. Rep. 674.

¹¹ 93 Cal. 676, 29 Pac. Rep. 325.

Southwestern States, where the year is divided into one wet and one dry season, and irrigation is necessary to successful cultivation of the soil, the doctrine of riparian ownership has by judicial decision been modified, or rather enlarged, so as to include the reasonable use of natural water for irrigating the riparian land, although such use may appreciably diminish the flow down to the lower riparian proprietor." As held in an Illinois case,¹² "In an arid country water for irrigation may become a natural want of man as exigent as when needed for domestic purposes, since without it vegetation would cease, and the sources of life be indirectly destroyed." ¹³ And as said in a Nebraska case,¹⁴ "The purpose of the law is to secure equality in the use of water by riparian owners, as nearly as may be, by requiring each to exercise his rights reasonably and with due respect to the rights of other riparian proprietors to apply the water to the same or other purposes. *This purpose is not subverted by any arbitrary classification*, and in regions where water must be carefully husbanded, and is in great demand for agricultural purposes, it is obviously better to incline toward such a rule with further equality and a wide participation in the benefits of a stream." ¹⁵ It, therefore, follows that, owing to the difficulty of classifying these uses and also in maintaining such a classification or classifications, the tendency now is to ignore the same and let the question as to the right to use the waters, as far as the common law is concerned, depend upon the reasonable use thereof, which use may be either natural or artificial, under the old common law rule classifying the same.¹⁶

§ 488. The use for natural wants may be extraordinary.— Under the rule of the common law, a riparian proprietor in the uses of the first class, as set forth in the preceding section,¹ for the

¹² Evans v. Merriweather, 3 Scam. (Ill.) 492, 38 Am. Dec. 106.

¹³ See, also, Wiggins v. Muscupiabe etc. Co., 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337.

¹⁴ Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 715, 60 L. R. A. 910, 108 Am. St. Rep. 697.

¹⁵ Citing Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

See, also, to the same effect, Crawford v. Hathaway (Hall), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647.

See, also, Jones v. Conn, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

¹⁶ For Irrigation as a Riparian Right, see Secs. 498-525.

¹ See Sec. 487.

purpose of supplying his natural wants, has the right to an extreme or extraordinary use of the water of a stream flowing past his land, and that, too, even if in supplying these wants all of the water of the stream is consumed, and none of which is permitted to flow down to the lower proprietors, and such a use is *damnum absque injuria* as to such lower owners.² These natural wants are limited in number—and are for domestic purposes, which include culinary and household purposes, cleansing and washing, and supplying the wants of the ordinary quantity of horses and stock.³ The rule permitting the owner to supply his natural wants from a stream is ordinarily applied to navigable streams as well as those which are nonnavigable.⁴ And, according to the great weight of the common law authorities, where the supply of water is very small for these natural wants, the upper riparian proprietor may, if necessary, consume all of the water of the stream to supply his natural wants, but not for any other purpose, and thus leaving no water to go down to the lower riparian owners or other users of the water.⁵

² *Miner v. Gilmour*, 12 Mo. P. C. 131, 156, 7 Week. Rep. 328, 3 L. R. A., N. S. 98; *Marbury v. Kitchin*, 3 F. & F. 392; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Swinton Water Co. v. Wilts Canal Co.*, L. R. 7 H. L. 697, 45 L. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 284; *Union Mill Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Union Mill Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370; *Id.*, 81 Fed. Rep. 73, 8 Morr. Min. Rep. 113; *Black v. Marsh*, 23 Pitts L. J. 29; *Springfield v. Harris*, 4 Allen 494, 81 Am. Dec. 715; *Anthony v. Lapham*, 5 Pick. 175; *Wadsworth v. Tillotson*, 15 Conn. 366, 39 Am. Dec. 391; *Arnold v. Foot*, 12 Wend. 330.

See, also, *Willis v. Perry*, 92 Iowa 297, 60 N. W. Rep. 727, 26 L. R. A. 124.

That for artificial or extraordinary uses the use of the water must be reasonable, see Secs. 489-496.

³ *Id.* *Atty. Gen. v. Great Eastern R. Co.*, 23 L. T. N. S. 344, 18 Week. Rep. 1187; *Lowe v. Lambeth Water Works Co.*, 52 L. T. N. S. 661; *Union Mill Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

⁴ *Morrill v. St. Anthony Falls W. P. Co.*, 26 Minn. 222, 2 N. W. Rep. 842, 37 Am. Rep. 399; *State v. Minneapolis M. Co.*, 26 Minn. 829, 2 N. W. Rep. 829.

⁵ *Id.* *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 81 Fed. Rep. 73, 8 Morr. Min. Rep. 113; *Roberts v. Richards*, 44 L. T. N. S. 271, 5 L. J. Ch. 297, 50 L. J. Ch. N. S. 297; *Evans v. Merriweather*, 3 Scam. 492, 38 Am. Dec. 106; *Crandall v. Woods*, 8 Cal. 136, 1 Morr. Min. Rep. 604; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Bear River Co. v. New York Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526; *Miner v. Gilmour*, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 3 L. T. N. S. 98; *White v. White*

"The use of the water of a stream for domestic purposes and for watering cattle necessarily diminishes the volume of the stream. This is unavoidable, and though, by reason of such diminution, a proprietor on a stream below fails to receive a supply commensurate with his wants, he is without remedy."⁶ But according to some

(1906), App. Cas. 72; Helfrich v. Cantonsville W. Co., 74 Md. 269, 22 Atl. 72, 13 L. R. 117; 28 Am. Rep. 245; Spence v. McDonough, 77 Iowa 460, 42 N. W. Rep. 371; Slack v. Marsh, 11 Phila. 543; Swift v. Goodrich, 70 Cal. 103, 11 Pac. Rep. 561; Willis v. Perry, 92 Iowa 297, 60 N. W. Rep. 727, 26 L. R. A. 124, but in this case the Court held that the use of water for a public bath house and steam washer for washing bathing towels was an extraordinary and artificial use of the water.

But see *People v. Hulbert*, 131 Mich. 156, 91 N. W. Rep. 211, 64 L. R. A. 265, 100 Am. St. Rep. 588, 18 Am. & Eng. Ency. of Law 135, 139; *Ulbricht v. Eufaula W. Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Katz v. Walkinshaw*, 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927; *Smith v. Corbit*, 116 Cal. 587, 48 Pac. Rep. 725; *Wiggins v. Muscupiabe etc. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Hale v. McLea*, 53 Cal. 578; *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Chauvet v. Hill*, 93 Cal. 407, 28 Pac. Rep. 1066; *Niel-*

son v. Sponer, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *McEvoy v. Taylor*, 56 Wash. 357, 105 Pac. Rep. 851; *Hazeltine v. Case*, 46 Wis. 391, 1 N. W. Rep. 66, 32 Am. Rep. 715.

In a recent Oregon case it was held that, for domestic use, including water not only for his household purposes but also for such animals as are essential for the proper sustenance of his family, the upper riparian owner may take so much of the water of a natural stream as may be necessary for that purpose, although none may be left for the lower riparian owners. *Caviness v. La Grande Irr. Co.*, — Ore. —, 119 Pac. Rep. 731.

⁶ *Ferrea v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128.

See, also, *Pennsylvania R. Co. v. Miller*, 112 Pa. 41, 3 Atl. Rep. 780; *Clark v. Pennsylvania R. Co.*, 145 Pa. 438, 22 Atl. Rep. 989, 27 Am. St. Rep. 710; *Anderson v. Cincinnati L. R. Co.*, 86 Ky. 44, 5 S. W. Rep. 49, 9 Am. St. Rep. 263; *Helfrich v. Cantonsville etc. Co.*, 74 Md. 269, 22 Atl. Rep. 72, 13 L. R. A. 117, 28 Am. Rep. 245; *Crawford County v. Hathaway*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728; *Union Mill & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113, 81 Fed. Rep. 73; *Barrett v. Metcalf*, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758; *Nielson v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *Baker v.*

authorities the use of water for culinary purposes and for cattle must not deprive the other proprietors of an equal enjoyment of the same right.⁷ Therefore, in these cases the rule is laid down upon the subject that the reasonable use of a quantity of water, for any purpose whatever, is always relative; and that it does not depend upon the convenience of, or the profitable results to, any particular proprietor, but upon the reasonable use, reference being had to the needs of all the other proprietors upon the stream. These cases, however, hold that it depends entirely upon the circumstances of each particular case.⁸ As we have said before, the arbitrary classification of uses of water into natural and artificial is somewhat fanciful.⁹ The better and more modern rule is to abolish such a classification, and to let each case stand upon the question of reasonable use, after taking into consideration the nature and extent of the use and all the other facts surrounding it.¹⁰

§ 489. The use of water for "artificial wants" must be reasonable.—The second class of uses under our classification made in a

Brown, 55 Tex. 377; Rhodes v. Whitehead, 27 Tex. 304, 84 Am. Dec. 331; Wadsworth v. Tillotson, 15 Conn. 366, 39 Am. Dec. 391; Atty. Gen. v. Great Eastern R. Co., 23 L. T. N. S. 344; Shury v. Piggot, 3 Bulst. 339, Phoenix 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280.

"A lower proprietor can not complain that one above uses the water of a stream for ordinary purposes, even though the water is thus exhausted." Barrett v. Metcalf, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758.

See, also, Rhodes v. Whitehead, 27 Tex. 304, 84 Am. Dec. 331; Baker v. Brown, 55 Tex. 377.

7 Norbury v. Kitchin, 9 Jur. N. S. 132, 7 L. T. N. S. 685.

8 Chatfield v. Wilson, 31 Vt. 358, 28 Vt. 49; Blanchard v. Baker, 8 Me. 253, 23 Am. Dec. 504; McElry v. Goble, 6 Ohio St. 187; Adams v. Barney, 25 Vt. 225; Pomeroy, Riparian Rights, Sec. 7; Townsend v. McDonald,

14 Barb. 460, 12 N. Y. 381, 64 Am. Dec. 508; Pillsbury v. Moore, 44 Me. 154, 69 Am. Dec. 91; Wadsworth v. Tillotson, 15 Conn. 366, 39 Am. Dec. 391; Bliss v. Kennedy, 43 Ill. 67; Heath v. Williams, 25 Me. 209; 43 Am. Dec. 274, note and cases cited; Stein v. Burden, 29 Ala. 127, 65 Am. Dec. 394; *Id.*, 27 Ala. 104; *Id.*, 24 Ala. 130, 60 Am. Dec. 453; Slack v. Marsh, 11 Phila. Leg. Int. 543; Elliot v. Fitchburg R. Co., 10 Cush. 193, 57 Am. Dec. 85.

It has been held in England that the use of water for brewing purposes was an ordinary use. Wilts Canal v. Swindon Water Co., L. R. 9 Ch. 457; Coulson & Forbes on Waters, 116.

9 See Sec. 487.

For use of water for irrigation, a natural or artificial want, see Secs. 499-506.

10 For reasonable use, see Secs. 489-496.

previous section are the so-called artificial uses, or those which are not immediately necessary for natural wants to sustain life.¹ These uses are for purposes of profit, comfort, trade, or improvement. The right of the riparian proprietors to use the water of a stream which runs through or adjoins their lands, to supply their extraordinary or artificial wants, or, in other words, all those wants which are not natural,² is common to them all. These uses include water for the running of machinery,³ diversion in some instances for irrigation,⁴ any other use where the diversion of the water from its natural channel is required,⁵ and also the use for bathing, boating, and many other purposes, which are not included among those immediately necessary to support life.⁶ For these uses, one riparian proprietor can never take all of the water in the stream to the exclusion of the other riparian proprietors upon the same stream.⁷ However, if the supply of water is sufficient, any proprietor can use the water of the stream for any purpose whatever, provided that none of the other proprietors or the public are injured, or have any of their rights infringed upon by his so using it.⁸ In other words

¹ See Secs. 487, 488.

² For use to supply natural wants, see Sec. 488.

³ For water rights for power purposes, see Sec. 492.

⁴ See for use of water for irrigation, a natural or artificial want, Secs. 499, 500.

⁵ See Sec. 491.

⁶ For natural wants, see Secs. 487, 488.

⁷ *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Heilbron v. 76 Land & Water Co.*, 80 Cal. 189, 22 Pac. Rep. 62; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Salem etc. Co. v. Lord*, 42 Ore. 82, 69 Pac. Rep. 1033, 70 Pac. Rep. 832; *McCartney v. Londonderry Railway*, App. Cas. (1904) 301.

⁸ See, also, Washburn on Easements, p. 216; Angell on Water Courses, Sec. 95; 3 Kent's Com. 440; *Elliot v. Fitchburg R. Co.*, 10 Cush. 191-195, 57 Am. Dec. 85; *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Union Mill Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Evans v. Merriweather*, 3 Scam. (Ill.) 492, 38 Am. Dec. 106; *Miller v. Miller*, 9 Pa. St. 74, 49 Am. Dec. 545; *Arnold v. Foot*, 12 Went. (N. Y.) 330; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Nuttall v. Bracewell*, L. R. 2, Exch. 1; *Miner v. Gilmour*, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 3 L. R. N. S. 98, 14 Eng. Reprint 861; *Gerrish v. New Market Mfg. Co.*, 30 N. H. 478; *Tillotson v. Smith*, 32 N. H. 90, 64 Am. Dec. 355; *Norway Plains Co. v. Bradley*, 52 N. H. 86; *Holden v. Lake Co.*, 53 N. H. 552; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723; *Mason v. Hill*,

his right to use the water must be reasonable with reference to the equal or correlative rights of all the other proprietors upon the stream with that of his own. For it must be always borne in mind that the rights of all the proprietors upon the stream are equal, in respect to all extraordinary uses of the water thereof.⁹

5 B. & Ad. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; *Barrett v. Parsons*, 10 Cush. 367; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Cary v. Daniels*, 49 Mass. 8 Met. 466, 41 Am. Dec. 532; *Pitts v. Lancaster Mills*, 54 Mass. 13 Met. 156; *Thurber v. Martin*, 2 Gray 394, 61 Am. Dec. 468; *Tourtellot v. Phelps*, 4 Gray 370; *Chandler v. Howland*, 7 Gray 348, 66 Am. Dec. 487; *Wood v. Edes*, 2 Allen 578; *Twiss v. Baldwin*, 9 Conn. 291; *Wadsworth v. Tillotson*, 15 Conn. 366, 39 Am. Dec. 391; *Agawan Canal Co. v. Edwards*, 36 Conn. 476; *Merritt v. Brinkerhoff*, 17 Johns. 306; *Timm v. Bear*, 29 Wis. 254, where it was held: "As between an upper and a lower mill on the same stream, what constitutes a reasonable use of water by the upper mill depends on the particular circumstances of each case; such as the nature, extent, and necessity of the use, the manner in which the water is applied, the previous usage, the nature and condition of the improvements upon the stream, the volume and velocity of the water, and its prospective rise and fall, the nature and situation of the lower mill and pond, the capacity of the latter, and the practicability of enlarging it."

See, also, *Farrell v. Richards*, 30 N. J. Eq. 511.

⁹ *Elliot v. Fitchburg R. Co.*, 10 Cush. (Mass.) 191, 57 Am. Dec. 85; *Merrifield v. Lombard*, 13 Allen 16, 90 Am. Dec. 172; *Middleton v. Flat River B. Co.*, 27 Mich. 533; *Miner v. Gilmour*, 12 Moore P. C. C. 131, 4 Week. Rep.

328, 3. L. R. N. S. 98, 14 Eng. Reprint 861; *Chasemore v. Richards*, 7 H. L. Cas. 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming 2 Hurlst. & N. 168, 11 Eng. Reprint 140; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Sandwich v. Grt. Nor. R. Co.*, L. R. 10 Ch. Div. 707, 27 Week. Rep. 616; *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Gould v. Boston Duck Club*, 13 Gray 442; *Haskins v. Haskins*, 9 Gray 390; *Merrifield v. Worcester*, 110 Mass. 219, 14 Am. Rep. 592; *Moulton v. Newburyport W. Co.*, 137 Mass. 163; *Mason v. Hoyle*, 56 Conn. 255, 14 Atl. 786; *Hetrick v. Deachler*, 6 Pa. 32; *Hazeltine v. Case*, 46 Wis. 391, 1 N. W. Rep. 66, 32 Am. Rep. 715; *Wadsworth v. Tillotson*, 15 Conn. 366, 39 Am. Dec. 391; *Evans v. Merriweather*, 3 Scam. (Ill.) 492, 38 Am. Dec. 106; *Pool v. Lewis*, 41 Ga. 162, 5 Am. Rep. 526.

What is a reasonable use of the water is a question of fact for the jury. *Heilbron v. 76 Land & Water Co.*, 80 Cal. 189, 22 Pac. Rep. 62.

See, also, *Prentice v. Geiger*, 74 N. Y. 341; *Hayes v. Waldron*, 44 N. H. 584, 84 Am. Dec. 105; *Barrett v. Parsons*, 10 Cush. (Mass.) 367; *Pollitt v. Long*, 3 Thomp. & C. 232. But see *Jones v. Prop. Portsmouth Aqueduct*, 62 N. H. 488; *Ferrea v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Twiss v. Baldwin*, 9 Conn. 291; *Gillett v. Johnson*, 30 Conn. 180; *Anderson v. Cincinnati*

What constitutes a reasonable use is a question of fact having regard to the subject-matter and the use; the occasion and manner

- So. R. Co., 86 Ky. 44, 5 S. W. Rep. 49, 9 Am. St. Rep. 263; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723; *Cline v. Stock*, 71 Neb. 70, 98 N. W. Rep. 454, 102 N. W. Rep. 265; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Kalama Co. v. Kalama Co.*, 48 Wash. 612, 94 * Pac. Rep. 469, 22 L. R. A. N. S. 641, 125 Am. St. Rep. 948; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191; *Alta etc. Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Hale v. McLea*, 53 Cal. 578; *Stenger v. Tharp*, 17 S. D. 13, 94 N. W. Rep. 402; *Morris v. Bean*, 146 Fed. Rep. 431; *Id.*, 159 Fed. Rep. 651, 86 C. C. A. 519; affirmed in 221 U. S. 485, 55 L. Ed. 821, 31 Sup. Ct. Rep. 703; *Union M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Union M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; *Id.*, 81 Fed. Rep. 73; *Stacey v. Delery*, 57 Tex. Civ. App. 242, 122 S. W. Rep. 300; *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A. N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823; *Hudson v. Dailey*, 156 Cal. 617, 105 Pac. Rep. 748; *State ex rel. Kettle Falls etc. Co. v. Superior Court*, 46 Wash. 500, 90 Pac. 650, holding that an irrigation company owning riparian land has no greater right to the waters of the stream than other riparian owners; *Pierson v. Speyer*, 178 N. Y. 270, 70 N. E. Rep. 799, 102 Am. St. Rep. 499, holding that, under certain circumstances, the storing of water in ornamental ponds is a reasonable use of the water.
- But see *Los Angeles v. Pomeroy*, 124 Cal. 597, 57 Pac. Rep. 585; writ of error dismissed, 188 U. S. 314, 23 Sup. Ct. Rep. 395, 47 L. Ed. 487, 63 L. R. A. 471; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Prentice v. Geiger*, 74 N. Y. 341, 9 Hun 350; *Penn. R. Co. v. Miller*, 112 Pa. St. 34, 3 Atl. 780; *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 113; 81 Fed. Rep. 73; *Dumont v. Kellogg*, 29 Mich. 420, 18 Am. Rep. 102; *Patten v. Marden*, 14 Wis. 473; *Rudd v. Williams*, 43 Ill. 385; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631; *Batavia Mfg. Co. v. Newton Wagon Co.*, 91 Ill. 230; *Pinney v. Luce*, 44 Minn. 369, 46 N. W. Rep. 561; *Ulbricht v. Eufaula W. Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72; *Morrill v. St. Anthony Falls W. P. Co.*, 26 Minn. 222, 2 N. W. Rep. 842, 37 Am. Rep. 399; *Tourtellot v. Phelps*, 4 Gray 370; *Saunders v. Bluefield Waterworks & Imp. Co.*, 58 Fed. 133; *Hoxsie v. Hoxsie*, 38 Mich. 77; *Pugh v. Wheeler*, 19 N. C. (2 Dev. & B. N. C.) 50; *Hendricks v. Johnson*, 6 Port. (Ala.) 472; *Hough v. Doylestown*, 4 Brewst. (Pa.) 333; *Oregon Iron Co. v. Trullenger*, 2 Ore. 1; *Woodin v. Wentworth*, 57 Mich. 278, 23 N. W. Rep. 813; *Ellis v. Clemens*, 21 Ont. Rep. 227; affirmed 22 Ont. Rep. 216; *Lancey v. Clifford*, 54 Me. 487, 92 Am. Dec. 561; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723; *Wheatley v. Chrisman*, 24 Pa. (12 Harris) 298, 64 Am. Dec. 657, 11 Morr. Min. Rep. 24; *Jacobs v. Allard*, 42 Vt. 303, 1 Am. Rep. 331; *Williamson v. Lock's Creek Canal Co.*, 78 N. C. 156; *Keeney & W. Mfg. Co. v. Union Mfg. Co.*, 39 Conn. 576; *Mason v. Cotton*, 4 Fed. Rep. 792, 2 Mc-

of its application; its object, extent, and necessity; the kind of business to which the water is subservient; the importance and necessity of the use claimed by one party; and the extent of the injury caused by that use to the other.¹⁰ There is no fixed rule of law for the determination of what will constitute a reasonable use by a riparian owner of the waters of a natural stream, but whether the use is reasonable depends upon the particular circumstances of each particular case.¹¹

In the early case of *Beisell v. Scholl*,¹² an action for diverting a water course, decided by the Supreme Court of the United States, it was held that every man in this country has the unquestionable right to erect a mill upon his own land, and to use the water passing through his land as he pleases, subject only to this limitation, that his mill must not be so constructed and employed as to injure his neighbor's mill, and that after using the water he returns the stream to its ancient channel. In a more recent Michigan case Mr. Justice Cooley thus states the rule: "As between different proprietors on the same stream, the right of each qualifies that of the other, and the question always is, not merely whether the lower proprietor suffers damage by the use of the water above him, nor whether the quantity flowing on is diminished by the use, but whether under all the circumstances of the case the use of the water by one is reasonable

Creary 82; *Bates v. Weymouth Iron Co.*, 8 Cush. (Mass.) 548; *Phoenix Cotton Mfg. Co. v. Hazen*, 118 Mass. 352; *White v. Whitney Mfg. Co.*, 60 S. C. 254, 38 S. E. Rep. 456; *Mississippi C. R. Co. v. Mason*, 51 Miss. 234; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

¹⁰ *Red River Roller Mills v. Wright*, 30 Minn. 249, 15 N. W. Rep. 167, 44 Am. Rep. 194.

See, also, *Wadsworth v. Tillotson*, 15 Conn. 366, 39 Am. Dec. 391; *Bassett v. Salisbury Mfg. Co.*, 43 N. H. 569, 82 Am. Dec. 179; *Van Bibber v. Hilton*, 84 Cal. 585, 24 Pac. Rep. 308.

¹¹ *Union Mill & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Stanford v. Felt*,

71 Cal. 249, 16 Pac. Rep. 900; *Lockwood Co. v. Lawrence*, 77 Me. 277, 52 Am. Rep. 763; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Heilbron v. 76 Land & W. Co.*, 80 Cal. 189, 22 Pac. Rep. 62; *Boyd v. Schreiber*, — Tex. Civ. App. —, 116 S. W. Rep. 100; *Ulbricht v. Eufaula Water Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72; *Lockwood Co. v. Lawrence*, 77 Me. 277, 52 Am. Rep. 763; *Dilling v. Murray*, 6 Ind. 324, 63 Am. Dec. 385; *Parker v. American etc. Co.*, 195 Mass. 591, 81 N. E. Rep. 468, 10 L. R., A. N. S., 584; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723.

12 4 U. S. 4 Dallas 211.

and consistent with a corresponding enjoyment of the right by the other." ¹³

According to all of the common law authorities, the only right of property in the water, flowing in its natural channel, is usufructuary; and that, after so using it, if the water has been diverted from its natural channel he must return it to the stream without material diminution of quantity or alteration of quality, for it is an ancient and well-established principle of the common law that the water of a stream can not lawfully be diverted unless it is returned again to its accustomed channel before it passes to the land of the proprietor below.¹⁴ But, under the common law, this right to the extraordinary use of water is inferior and subordinate to the right of its ordinary use for the supplying of natural wants; for if the water of a stream is barely sufficient to supply the natural wants of the different proprietors none of them can use the water for such extraordinary purposes as irrigation or manufactures, or for any other purpose, except to supply himself and family with a sufficient quantity for domestic purposes, if in so using it he infringes upon the rights of any of the other riparian proprietors.¹⁵ The two most important of the extraordinary uses under this class are the use of the water for the working of machinery and mills,¹⁶ and the second is the use of water for irrigation under the common law. The first use is more important in the Eastern portion of our country, while

¹³ *Dumont v. Kellogg*, 29 Mich. 420, 18 Am. Rep. 102.

See, also, *Cary v. Daniels*, 49 Mass. 8 Met. 466, 4 Am. Dec. 532.

¹⁴ For ownership in water, see Secs. 288, 289, 455; *Angell on Water Courses*, Sec. 94.

See, also, cases cited above.

See, also, *Blanchard v. Baker*, 8 Greenl. (Me.) 253, 23 Am. Dec. 504; *Colborn v. Richards*, 13 Mass. 420, 7 Am. Dec. 160; *Cook v. Hull*, 3 Pick. 269, 15 Am. Dec. 208; *Anthony v. Lapham*, 5 Pick. (Mass.) 175.

¹⁵ For supplying natural wants, see Secs. 487, 488; *Union Mill & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 113; *Id.*, 81 Fed. Rep. 73; *Crandall v.*

Woods, 8 Cal. 136, 1 Morr. Min. Rep. 604; *Ellis v. Tone*, 58 Cal. 289.

¹⁶ For use of water for power purposes, see Secs. 837-846.

See, also, *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Cline v. Stock*, 71 Neb. 70, 98 N. W. Rep. 454, 102 N. W. Rep. 265; *Webb v. Portland Mfg. Co.*, 3 Summ. 189, Fed. Cas. No. 17,322; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Bowman's Devises v. Wathen*, 2 McLean 376, Fed. Cas. No. 1076; *Beisell v. Scholl*, 4 U. S. 4 Dallas 211; 1 L. Ed. 804; *Kalama Elec. L. & P. Co. v. Kalama Driving Co.*, 48 Wash. 612, 94 Pac. Rep. 469, 22 L. R., A. N. S., 641, 125 Am. St. Rep. 948.

the latter use is to be found in the extreme Western Coast States and the States of the Middle West, in which there is an attempt to reconcile the appropriation and diversion of waters from the natural streams for the purpose of irrigation with the common law.¹⁷ Both of these subjects, however, will be treated in subsequent chapters.¹⁸

§ 490. Reasonable use defined.—As stated in the preceding section,¹ the use by a riparian proprietor of the water of the stream flowing by his lands must be reasonable; and as to what is a reasonable use depends upon the circumstances surrounding each particular case. Now, the question arises, What is a reasonable use as a question of law? No arbitrary classification as to just what may or may not be a reasonable use in all cases has been or can be made by any court, but there are certain rules which have been laid down by the appellate courts, which aid the jury, or the trial courts, in trying the case without a jury, in arriving at their conclusions. It must be distinctly understood, however, as to whether or not the facts surrounding any particular case come within the general rules laid down by the courts, as what is a reasonable use of water is one of the facts for the jury to decide.

Among the general rules laid down by the courts are to be found: First, the use to be reasonable must work no unnecessary injury to other riparian proprietors upon the same stream;² second, the char-

¹⁷ For irrigation under the common law, see Chap. 26, Secs. 498-525.

¹⁸ For use of water for power purposes, see Secs. 847-855.

For irrigation under the common law, see Chap. 26, Secs. 498-525.

See, also, the question of reasonable use of subterranean waters, Secs. 1191-1200.

See, also, upon this subject, *Katz v. Walkinshaw*, 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35.

¹ See Sec. 489.

² One riparian proprietor can not appropriate a specific portion of the water of a stream to his own use to the exclusion of those below him, and

to the injury of their rights. *Plumleigh v. Dawson*, 6 Ill. 544, 41 Am. Dec. 199; *McCartney v. Londonderry Railway*, App. Cas. (1904) 301; *Salem etc. Co. v. Lord*, 42 Ore. 82, 69 Pac. Rep. 1033, 70 Pac. Rep. 832.

See, also, cases cited in the notes of the preceding section, 489.

But so long as there is no larger portion of water running through the land than is just and reasonable, it can not be considered to be wrongful or injurious to a proprietor lower down the stream. *Elliot v. Fitchburg R. Co.*, 10 Cush. (Mass.) 191, 57 Am. Dec. 85; *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Baltimore v. Appold*, 42 Md. 442; *Townsend v. Bell*, 70 Hun, 557, 24 N. Y. Sup. 193;

acter and extent of the particular use in its relation to the size of the stream and custom of the country;³ and, third, the necessities of the one making use of the water. As was held in a Minnesota case,⁴ what constitutes a reasonable use is a question of fact, having regard to the subject-matter and the use; the occasion and manner of its application; its object, extent, and necessity; the nature and size of the stream; the kind of business to which it is subservient; the importance and necessity of the use claimed by one party; and the extent of the injury caused by it to the other.⁵ The rule of equality of right is what determines the quantity to be used by each riparian proprietor.⁶

In a leading case upon the subject in Massachusetts,⁷ it was said:

Union Mill & Min. Co. v. Dangberg, 2 Sawy. 450, Fed. Cas. No. 14,370.

See, also, *Id.*, 81 Fed. Rep. 73; Wright v. Howard, 1 Simon & Stuart 190, 1 L. J. Ch. 94, 24 Rev. Rep. 169.

³ White v. Whitney Mfg. Co., 60 S. C. 254, 38 S. E. Rep. 456; Pool v. Lewis, 41 Ga. 162, 5 Am. Rep. 526.

See, also, Snow v. Parsons, 28 Vt. 450, 67 Am. Dec. 723, where it was held that the question of reasonableness of the use of the stream is one of fact when it is not settled by custom, as in the question of irrigation, propelling machinery, and watering cattle, and when it is in its nature doubtful.

See, also, Jacobs v. Allard, 42 Vt. 303, 1 Am. Rep. 331.

⁴ Red River Roller Mills v. Wright, 30 Minn. 249, 15 N. W. Rep. 167, 44 Am. Rep. 194.

See, also, Tourtellot v. Phelps, 4 Gray 370.

⁵ See, also, Meng v. Coffey, 67 Neb. 500, 93 N. W. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; Crawford v. Hathaway (Hall), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; Gehlen Bros. v. Knorr, 101 Iowa 700, 70 N. W. 757,

36 L. R. A. 697, 63 Am. St. Rep. 416; Willis v. Perry, 92 Iowa 297, 60 N. W. Rep. 727, 26 L. R. A. 124; White v. Whitney Mfg. Co., 60 S. C. 254, 38 S. E. 456; Gutierrez v. Wege, 145 Cal. 730, 79 Pac. Rep. 449; *Id.*, 151 Cal. 587, 91 Pac. Rep. 395; McEvoy v. Taylor, 56 Wash. 357, 105 Pac. Rep. 851, where it is said: "The parties being riparian owners, their respective rights to the use of the water are to be determined by their rights as such riparian owners. These rights are now well established. As a riparian owner is entitled to reasonable use of the waters as an incident to his ownership, and, as all owners upon the same stream have the same right of reasonable use, the use of each must be consistent with the rights of others, and the right of each is qualified by the rights of others."

See, also, City of Aberdeen v. Lytle etc. Co., 58 Wash., 368, 108 Pac. Rep. 945.

⁶ Pinney v. Luce, 44 Minn. 369, 46 N. W. Rep. 561.

See, also, Crook v. Hewitt, 4 Wash. 749, 31 Pac. Rep. 28.

⁷ Elliot v. Fitchburg R. Co., 10 Cush. (Mass.) 191, 57 Am. Dec. 85.

"The right to flowing water is now well settled to be a right incident to property in the land; it is a right *publici juris*, of such a character that, while it is common and equal to all through whose land it runs, and no one can obstruct or divert it, yet, as one of the beneficent gifts of Providence, each proprietor has a right to a just and reasonable use of it as it passes through his land; and so long as it is not wholly obstructed or diverted, or no larger appropriation of the water running through it is made than a just and reasonable use, it can not be said to be wrongful or injurious to a proprietor lower down. What is a just and reasonable use may often be a *difficult question*, depending upon various circumstances."⁸ No hard and fast rule can be laid down defining what would be a reasonable use of the water in every case by a riparian proprietor. And, after a careful study of the authorities upon the proposition, we will only add that about the only definition that can be given of the term reasonable use by one riparian proprietor is that it must be reasonable, taking into consideration the facts and circumstances surrounding each particular case and the equal or correlative rights of all of the other riparian proprietors upon the same stream. As was said in a Pennsylvania case: "Each proprietor may make any reasonable use of the water upon the premises; he may diminish the quantity, but the use must be a reasonable one."⁹ The difficulty of defining "reasonable use" in cases of this nature was also recognized in a recent Massachusetts case,¹⁰ wherein it is said: "It is difficult, if not impossible, to reconcile all the decisions which have been made upon the question of the right of riparian proprietors to use the waters of streams flowing through or along their lands. This is a com-

⁸ The doctrine in the above case was reaffirmed in the late case of *Parker v. American Woolen Co.*, 195 Mass. 591, 81 N. E. Rep. 468, 10 L. R. A., N. S. 584.

See, also, *Cary v. Daniels*, 49 Mass. 8 Met. 466, 4 Am. Dec. 532; *Thurber v. Martin*, 2 Gray, 394, 61 Am. Dec. 468; *Gould v. Boston Duck Co.*, 13 Gray 442; *Pitts v. Lancaster Mills*, 13 Met. 156; *Springfield v. Harris*, 4 Allen 494, 81 Am. Dec. 715; *Snow*

v. Parsons, 28 Vt. 450, 67 Am. Dec. 723; *O'Riley v. McChesney*, 49 N. Y. 672; *Brown v. Kistler*, 190 Pa. 499, 42 Atl. Rep. 885; *Wadsworth v. Tillotson*, 15 Conn. 336, 39 Am. Dec. 391; *Lancey v. Clifford*, 54 Me. 487, 92 Am. Dec. 561.

⁹ *Brown v. Kistler*, 190 Pa. 499, 42 Atl. Rep. 885.

¹⁰ *Parker v. American Woolen Co.*, 195 Mass. 591, 81 N. E. Rep. 468, 10 L. R. A., N. S. 584.

mon right, and each must exercise it with due regard to the rights of others, and each must submit to that degree of inconvenience and hardship in the exercise of his rights which results from the existence of like rights in others. In such cases each proprietor is entitled to use the stream in such reasonable manner, according to usages and wants of the community, as will not be inconsistent with a like use by other proprietors above and below him."

*

§ 491. **The use of water by diversion an extraordinary one.**—

All uses of the water which require a diversion of the same from the natural channels thereof come under the class of artificial or extraordinary uses. Under the common law priority of appropriation is not recognized, and the first appropriator of running water has no right to divert the stream to the injury of other riparian proprietors, who may afterward seek to use the stream.¹ In fact, under a strict construction of the common law, especially in the early cases, both in England and in this country, the diversion of a water course, even where there was no actual injury to the riparian owners lower down the stream, legally imports damage, because it is an infringement of a right.² Mr. High says: "A riparian proprietor, owning to the center of the stream, is en-

¹ *Gilman v. Tilton*, 5 N. H. 231; *Martin v. Biglow*, 2 Aik. (Vt.) 184, 16 Am. Dec. 696; *Twiss v. Baldwin*, 9 Conn. 291; *Heath v. Williams*, 25 Me. 209, 43 Am. Dec. 265; *Dumont v. Kellogg*, 29 Mich. 420, 18 Am. Rep. 102.

² *Angell on Water Courses*, Sec. 135, and cases cited; *Mason v. Hill*, 5 Barn. & Ad. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; *Wilts & Berks Canal Nav. Co. v. Swindon Waterworks Co.*, L. R. 9 Ch. 457, S. C. L. R. 7 H. L. 697; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; but see *Chasemore v. Richards*, 7 H. L. Cas. 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming 2 H. & N. 168.

See, also, *Pope v. Kinman*, 54 Cal.

3; *Bolivar Mfg. Co. v. Neponset Mfg. Co.*, 16 Pick. (Mass.) 241; *Shook v. Colohan*, 12 Ore. 239, 6 Pac. Rep. 503; *Butman v. Hussey*, 12 Me. 407; *Hiliker v. Coleman*, 73 Mich. 170; *Dumont v. Kellogg*, 29 Mich. 420, 18 Am. Rep. 102; *Rummell v. Lamb*, 100 Mich. 424, 56 N. W. Rep. 167; *Pyle v. Richards*, 17 Neb. 180, 22 N. W. Rep. 370; *Crooker v. Bragg*, 10 Wend. (N. Y.) 260; *Heath v. Williams*, 25 Me. 209, 43 Am. Dec. 265; *Shury v. Piggott*, 3 Bulst. 339, *Popham* 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280.

The diversion of a water course from its ancient channel is a nuisance. *Shields v. Arndt*, 4 N. J. Eq. 234.

See, also, *Weiss v. Oregon Iron Co.*, 13 Ore. 496, 11 Pac. Rep. 255.

titled to the aid of equity to prevent a diversion of the water from the natural channel. Nor does the neglect of complainants to use or appropriate the water-power, or the fact that they have as yet sustained but small pecuniary damage, or that the defendant would be subjected to heavy expense if compelled to restore the water to its original channel, present such objections as would warrant a Court of Equity in refusing relief."³ In the later cases, however, it is held that the use by diversion is but one of the methods of using the water for extraordinary uses, and that the same rule applies as to those extraordinary uses where the water is not diverted.⁴ In other words, a riparian owner has the right to the use of the stream by diverting a portion of the same, but this right must be reasonably exercised, and the water must be returned to the channel unpolluted and without any essential diminution or waste, and before the water reaches the lands of the lower proprietors.⁵ Such uses of a stream by riparian proprietors is to some extent a question of degree, and in all such cases the size and capacity of the stream are to be considered, and the amount of the water diverted and for what purpose. The amount taken out from a large running river which would cause no sensible or practical diminution of its benefits to the lower proprietors would, if taken from a small stream, materially diminish its quantity and

³ High, Inj., Sec. 795, and authorities cited.

See also, Remedies, Injunctions.

⁴ See Extraordinary Use Must be Reasonable, Sec. 489.

⁵ Haymes v. Gault, 1 McCord S. C. 543; Farnum v. Falmouth, 25 Eng. C. L. Rep. 526, 6 Car. & P. 529, 2 Ad. & El. 452, 4 L. J. K. B., N. S. 269; Bealey v. Shaw, 6 East 208, 2 Smith 321, 102 Eng. Reprint 1266; Kimberly & C. Co. v. Hewitt, 79 Wis. 334; Parker v. Griswold, 17 Conn. 288, 9 L. R. A. 810, 42 Am. Dec. 739; Sackrider v. Beers, 10 Johns. 241; Weiss v. Oregon Iron Co., 13 Ore. 496, 11 Pac. Rep. 255; Tucker v. Salem Flouring Mills Co., 15 Ore. 581, 16 Pac. Rep. 426.

The upper proprietor may divert

the water for use on his own land, provided he restores it to the stream before it reaches the land of the lower proprietor. Webster v. Fleming, 2 Humph. 518.

See, also, Norton v. Valentine, 14 Vt. 246, 39 Am. Dec. 220; Stein v. Burden, 29 Ala. 127, 65 Am. Dec. 394; Canfield v. Andrew, 54 Vt. 1, 41 Am. Rep. 828; Plumleigh v. Dawson, 6 Ill. 544, 41 Am. Dec. 199; Blanchard v. Baker, 8 Me. 253, 23 Am. Dec. 504; Perkins v. Dow, 1 Root (Conn.) 535.

The erection of a dam which causes the water to spread out over a large tract of land and be lost by evaporation and percolation, is a wrongful diversion of the water. White v. East Lake Land Co., 96 Ga. 415, 23 S. E. Rep. 393, 51 Am. St. Rep. 141.

work a manifest injury to those below. All the common law authorities concur that, when the amount abstracted perceptibly or materially diminishes the quantity of the stream, so that injury results to those below, such a use of it by a riparian owner is unreasonable, and an infringement on the rights of other riparian owners, for which the law furnishes redress. Neither does necessity make any difference. As was said by Black, J., in *Wheatley v. Chrisman*: "The necessities of one man's business can not be the standard of another's rights in a thing which belongs to both."⁶

Again, the diversion of a water course, or a part of it, by an upper riparian proprietor for generating power, or for other manufacturing purposes, without restoring to the natural channel the water after it has passed through the machinery is never allowed. In fact, any use of the water of a stream can not be considered a reasonable one which involves substantial diminution and waste.⁷ As was held in a very recent California case, a riparian owner has the right to make any use of the water, beneficial to himself on the riparian land, including the generating of electric power, which his situation enables him to make; but, if his use involves the consumption of the water, he can not use more than his reasonable share as compared to the other riparian owners, and he must not pollute the water to the injury of the others entitled to it, and the water he does not consume must be returned to the stream before it passes his land.⁸ As to what constitutes a reasonable use of water by diversion under the common law rule, is primarily a question of fact, to be settled by the jury in view of all the circumstances of each particular case.⁹

The subject of irrigation and the diversion of the waters of

⁶ 24 Pa. St. 302, 64 Am. Dec. 657.

See, also, *Pennsylvania R. Co. v. Miller*, 112 Pa. 34, 3 Atl. Rep. 780.

⁷ *Van Hoesen v. Coventry*, 10 Barb. 518.

⁸ *Mentone Irr. Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222.

See, also, *Gould v. Eaton*, 111 Cal. 639, 44 Pac. Rep. 319, 52 Am. St. Rep. 201; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St.

Rep. 158; *Arroyo D. & W. Co. v. Baldwin*, 155 Cal. 280, 100 Pac. Rep. 874.

⁹ See, also, Secs. 511-513; *White v. Whitney Mfg. Co.*, 60 S. C. 254, 38 S. E. Rep. 456; *Pool v. Lewis*, 41 Ga. 162, 5 Am. Rep. 526; *Red River Roller Mills v. Wright*, 30 Minn. 249, 15 N. W. Rep. 194, 44 Am. Rep. 194; *Tourtellot v. Phelps*, 4 Gray 370; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723; *Jacobs v. Allard*, 42 Vt. 303; 1 Am. Rep. 331.

streams where all of the water is practically consumed in those States which adhere to the common law doctrines of riparian rights and at the same time permit the appropriation and diversion of water for these uses we will discuss in a subsequent chapter of this work.¹⁰

§ 492. What is a reasonable use for power purposes.—A riparian owner also has the right to the use of the waters of a stream flowing by his land for the development of power, either by direct power developed from the flow of the water itself, or by the generation of electric energy for transmission of electricity to other places than at the point where the same is developed upon the stream. The use of any riparian proprietors of the water for this purpose must be reasonable as compared to the like or other uses by other riparian proprietors upon the same stream. If the water is diverted from the stream for the purpose of getting a fall and thus developing power, after its use it must be returned to the stream for the use of the other riparian proprietors below. Any other disposition of the water after use would be termed an unreasonable use of the water. But it is not our intent at this point to discuss this subject at length, for the reason that the subject of use of water for power purposes, both under the common law of riparian rights and under the Arid Region doctrine of appropriation, will be fully discussed together in a subsequent chapter of this work.¹

§ 493. What is a reasonable use in cutting ice.—The rights of riparian owners to the use of the water of a stream are not affected by the fact that it is proposed to remove the water in its congealed or frozen state. It therefore follows that the cutting of ice from a stream of water is the use of the water. As was said in an Iowa case:¹ "The use of ice is water in another form—is congealed water." It is therefore held that the taking of ice in a running stream in most respects is subject to the same rules which govern the rights of the riparian proprietor to the water. In other words,

¹⁰ For Irrigation Under the Common Law, see Secs. 498-525.

¹ For Power and Mill Rights, see Chap. 47, Secs. 847-855.

¹ *Brown v. Cunningham*, 82 Iowa 512, 48 N. W. 1042, 12 L. E. A. 583.

that the riparian proprietor's right to the use in the stream is the same as in the water before it is congealed, is a proposition well settled.² And it is further held that the erection of a dam on a nonnavigable stream by a riparian owner to form a pond in which to harvest ice is not an unreasonable use of the water which will entitle the lower mill owner to an injunction, it appearing that about 25 per cent of the power used by the mill was furnished by the water, and that it took only two days and a night to fill the upper pond.³ The general rule upon this proposition is that the riparian owner of a nonnavigable water course has the right to cut and remove the ice from the stream adjoining his land in any quantity and to any extent for his own use, or for storage, or for sale, if he does not thereby appreciably diminish the quantity of the water flowing in the stream down to the lower riparian proprietors to their actual and substantial damage.⁴

§ 494. The manner of taking the water must be reasonable.—The manner of the taking of water from the natural stream by riparian owners, whose lands border thereon, is immaterial so long as such taking is within the rule of reasonable use, as discussed in the previous sections of this chapter,¹ and providing, of course,

² Gehlen Bros. v. Knorr, 101 Iowa 700, 70 N. W. Rep. 757, 36 L. R. A. 697, 63 Am. St. Rep. 416; Elliot v. Fitchburg R. Co., 10 Cush. (Mass.) 191, 57 Am. Dec. 85; Biglow v. Shaw, 65 Mich. 341, 32 N. W. Rep. 800, 8 Am. St. Rep. 902; Mill River Woolen Mfg. Co. v. Smith, 34 Conn. 462; Edgerton v. Huff, 26 Ind. 35; Brown v. Bowen, 30 N. Y. 519, 86 Am. Dec. 406; Stevens v. Kelley, 78 Me. 445, 6 Atl. Rep. 868, 57 Am. Rep. 813; Cummings v. Barrett, 10 Cush. (Mass.) 186; Brookville & M. Hydraulic Co. v. Butler, 91 Ind. 134, 46 Am. Rep. 580; State v. Pottmyre, 33 Ill. 402, 5 Am. Rep. 224; Eide-miller Ice Co. v. Guthrie, 42 Neb. 238, 60 N. W. 717, 28 L. R. A. 581.

³ Gehlen Bros. v. Knorr, see *supra*.

⁴ Gehlen Bros. v. Knorr, see *supra*;

Paine v. Woods, 108 Mass. 160; Searle v. Gardner, 12 Central Rep. 420, 13 Atl. Rep. 835; Howell v. Andrews, 62 Conn. 398, 26 Atl. 394; Gould on Waters, Sec. 191.

See, also, 2 Farnham on Waters and Water Rights, Sec. 473a, Ice.

See, also, Marshall Ice Co. v. La Plant, 136 Iowa 621, 111 N. W. Rep. 1016, 12 L. R. A., N. S., 1073, where it is held, that one who, after maintaining a mill dam for more than forty years, sells land under the pond for the establishment of an ice business for which the continued maintenance of the pond is necessary, will not be permitted subsequently to remove the dam, for the reason that the sale made the artificial condition the natural one.

¹ See Secs. 488-493.

that there is no waste of the water. The taking may be by dam, constructed in the stream and through a ditch.² The riparian owner may also store the flood waters of the stream which come down to him during the wet season, and when a reasonable amount is so stored, taking into consideration the like rights of the other riparian proprietors, he may have the sole use of the waters so stored.³ It may be by means of pumps, which raise the water to a sufficient height to enable it to run to the place of use.⁴ The water may be also taken by means of tunnels driven so that the waters of the stream may seep therein, and from which they will flow to the places of use.⁵ Two or more riparian proprietors may be tenants in common in the ditch or canal constructed for the purpose of taking the water, and they may join in common diversion if they take no more water than their combined share of the flow of the stream, and thereby the rights of others are not injured or interfered with. A riparian proprietor may change the point of diversion so long as he does not do unreasonable injury to the rights of the lower owners upon the stream.⁶

Where the riparian owner owns the land on both sides of the stream he has the right to make any change upon his own lands of the course of the stream. This is also true where the riparian owner upon the opposite side of the stream does not object or assists in this change. However, in such cases the flow of the water must be returned to the natural channel before it reaches the lands of the riparian owners below.⁷ "It is a settled principle

² *Arroyo Ditch Co. v. Baldwin*, 155 Cal. 280, 100 Pac. Rep. Rep. 874.

³ *Perry v. Citizens Water Works Co.*, 59 Hun, 199, 13 N. Y. Sup. 471; *Stacey v. Delery*, 57 Tex. Civ. App. 242, 122 S. W. Rep. 300.

But it is held that an upper riparian owner can not impound all the waters flowing in a stream for 14 hours out of every 24, without the consent of the lower riparian owner. *Tacoma East. R. Co. v. Smithgall*, 58 Wash. 445, 108 Pac. Rep. 1091.

⁴ *Charnock v. Higuerra*, 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195; *Chatfield v. Wilson*, 31 Vt. 358; *Id.*, 28 Vt. 49;

Id., 27 Vt. 670; *Norbury v. Kitchin*, 7 L. T. N. S. 685.

⁵ *McClintock v. Hudson*, 141 Cal. 275, 74 Pac. Rep. 849.

⁶ See, also, *Right of Appropriators to Change the Point of Diversion*, Secs. 857-860; *Whittier v. Cochecho Co.*, 9 N. H. 45, 32 Am. Dec. 382; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472; 4 Morr. Min. Rep. 571.

⁷ *Mentone Irrigation Co. v. Redlands Electric Light & Power Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S. 382, 17 Am. & Eng. Ann. Cas. 1222; *Cook v. Seaboard Air Line R. Co.*, 107 Va. 32, 57 S. E. Rep. 564, 10 L. R. A., N. S., 966, 122 Am. St.

of the common law that a proprietor may change the whole course of a stream within the limits of his own land, provided he restores the water undiminished to its original channel before leaving his premises, and other persons are not injured by such diversion.”⁸ The diversion from the natural stream may be also made upon the lands of others and the waters carried over such lands to the riparian lands of the owner making such diversion, provided, of course, that rights of way may be acquired over the lands of the intervening owners.⁹

§ 495. **The manner of the use must be reasonable.**—It was also held that under the common law the manner of the use of the water by riparian owners must be reasonable and always made after taking into consideration the rights of the other owners upon the same stream. The use must be such that there will be no waste. It is a settled rule of the common law that all waste is prohibited; and if brought to the attention of the Court in a proper action will be enjoined.¹ The method of the application of the water is entirely immaterial so long as the riparian owner applying the same keeps within the rule of reasonable use as fixed by the principles of the common law and the rights of others are not materially and substantially injured by such use.² So in a case where the riparian owner in the use of water permits the

Rep. 825, where it was held that although a water course flowing through a tract of land has been changed to an artificial channel, at the time a railroad constructs its roadbed through such tract the company is bound to provide for the flow of the waters through a channel and through ways for freshets the same as though the channel were a natural one, if it had existed for a number of years and is to all appearances permanent.

See, also, *Dilling v. Murray*, 6 Ind. 324, 63 Am. Dec. 385; *Stein v. Burden*, 29 Ala. 127, 65 Am. Dec. 394; *Canfield v. Andrews*, 54 Vt. 1, 41 Am. Rep. 828.

⁸ *Cook v. Seaboard Air Line R. Co.*, *supra*.

⁹ *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S., 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823; *Redwater etc. Co. v. Jones*, — S. D. —, 130 N. W. Rep. 85; *Logan v. Guitchard*, 159 Cal. 562, 114 Pac. Rep. 989, where it was held that a prescriptive right might be had to a ditch upon the riparian lands of another, or that such right of way might be continued.

See, also, *California etc. Co. v. Enterprise etc. Co.*, 127 Fed. Rep. 741.

¹ For the protection of riparian rights by injunction, see Part XIII.

² *Campbell v. Grines*, 62 Kan. 503, 64 Pac. Rep. 62; *McClintock v. Hudson*, 141 Cal. 275, 74 Pac. Rep. 849.

same to spread out so that a large proportion will be lost by unnecessary evaporation, such use is unreasonable, and wasteful.³ And again, where it is ditched through porous soil in such a way that much or all is lost before the water actually reaches the place of intended use.⁴ The use of the water by one owner must also be such that it does not flood the lands of other riparian owners.⁵ Again, the use must not unreasonably accelerate, or retard, the flow of the stream from which the water is taken.⁶ It must be borne in mind that in all cases of use of waters by any riparian proprietor the method of use is immaterial so long as it does not materially and substantially injure the rights of other riparian proprietors on the same stream. As was held in a recent California case, a riparian proprietor has the right to make any use of the water beneficial to himself on the riparian land which his situation enables him to make; but if his use involves a consumption of water he can not use more than his reasonable share, as compared with the other riparian owners, and he must not pollute the water to the injury of others entitled to it.⁷

§ 496. All surplus water must be returned to the stream after use.—There is one well-settled rule of riparian rights to the use of the waters and that is, after diversion and use of the water, all surplus water must be returned to the natural stream from which it was taken before it reaches the lands of the riparian owners below the lands of the one so using the water. And, as regarding this return of the water, it makes no difference as to the purpose for which it was originally diverted. It might have been diverted for irrigation, for mill purposes, for the development of power, or

³ *Ferrea v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Lawrie v. Silsby*, 82 Vt. 505, 74 Atl. Rep. 94.

⁴ *Nielsen v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910.

⁵ *Durga v. Lincoln etc. Co.*, 47 Wash. 477, 92 Pac. Rep. 343.

⁶ *Radford v. Wood*, 83 Neb. 773, 120 N. W. Rep. 458; *Trullinger v. Howe*, 53 Ore. 219, 97 Pac. Rep. 549, 99 Pac. Rep. 880, 22 L. B. A., N. S. 545.

See, also, for accelerating or retarding the flow, Secs. 545, 546.

⁷ *Mentone Irrigation Ditch Co. v. Redlands Electric Light & Power Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. B. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222; *Gould v. Eaton*, 111 Cal. 639, 44 Pac. Rep. 319, 52 Am. St. Rep. 201; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158.

for any other purpose to which the use of the waters of natural streams is applied; but after this use, or after any water is diverted which is not used, it must all be returned to the natural stream from which it was taken so that those below who are entitled to the same right of use may not be injured. If the water is not so returned it is considered a wasteful, unnecessary, and unreasonable use of the water.¹ The manner of making the return of the water to the natural stream is immaterial, but it must be returned.² As was said in a recent California case upon the subject of the return of the water to the stream by a riparian owner: "The water he does not consume must be returned to the stream before it passes his land."³ This subject, however, will be more thoroughly investigated when we come to a discussion of Irrigation as a Riparian Right.⁴

§ 497. **No priority of right at common law.**—As we have seen, at common law the right of every proprietor on a stream to the use of the running water thereof exists only as an incident to the private ownership of the bank bordering on the stream, and arises *ex jure naturae*,¹ and is equal in all the proprietors whose lands adjoin the same stream. And, as we have seen, this right to the reasonable use of the water of a stream, as it passes through or by a proprietor's lands, depends upon all of the circumstances of each particular case; and, also, after a riparian owner has made a so-called "reasonable use" of it, he must return it without substantial

¹ Nielson v. Sponer, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; Bathgate v. Irvine, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; Weiss v. Oregon etc. Co., 13 Ore. 496, 11 Pac. 255; City of Canton v. Shock, 66 Ohio St. 19, 63 N. E. Rep. 600, 58 L. R. A. 637, 90 Am. St. Rep. 557.

² Wiggins v. Muscupiabe etc. Co., 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; Gould v. Eaton, 117 Cal. 539, 49 Pac. 577, 38 L. R. A. 181; Mason v. Cot-

ton, 4 Fed. Rep. 792, 2 McCrary 82.

³ Mentone etc. Co. v. Redlands Electric Light & Power Co., 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222.

See, also, Bathgate v. Irvine, 126 Cal. 135, 58 Pac. 442, 77 Am. St. Rep. 158; Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

⁴ See Secs. 498-525.

¹ See Secs. 451, 452.

See, also, Angell on Water Courses, Secs. 5, 10; Gould on Waters, Secs. 204-209, and cases cited; Pomeroy on Riparian Rights, Sec. 4.

diminution in quantity, or alteration in quality, to its natural bed or channel before it leaves his own land, so that it will reach the proprietor below him in its full, original, and natural condition. If he is the owner of the land adjoining the stream his rights exist in and to the waters thereof, whether he chooses to exercise them or not, and he may begin to exercise them when he will.²

So, under the common law, a prior settlement on the land, or a prior use of the water by any one riparian owner, is not recognized as giving any superior right, either higher up or lower down on the stream, or as against any of the other proprietors abutting on either side of him on the shores of a lake. Therefore an exclusive right to the use of the water by one owner as against the others can not be successfully claimed by virtue of mere prior use or occupancy, as against the equal or correlative rights of all the other proprietors whose lands touch upon the same stream, unless he has acquired a grant from all the other proprietors affected by such use, or sufficient time has elapsed for him to obtain title to such use by prescription, which, of course, presupposes a grant.³ In other words, priority of use is not recognized, and the doctrine of prior appropriation is not the doctrine of the common law.⁴ In

² See Secs. 543-545.

³ See, also, Gould on Waters, 226, 227; Angell on Water Courses, Secs. 130-135; Pomeroy on Riparian Rights, Sec. 4; Gilman v. Tilton, 5 N. H. 231; Cowles v. Kidder, 24 N. H. 364; Parker v. Hotchkiss, 25 Conn. 321, where the Court held that, as between riparian proprietors priority of appropriation of the waters of a running stream which is common to all for the driving of machinery, gives one no superior right, unless it has been continued for such a period of time and under such circumstances as would be required to establish right by prescription. Heath v. Williams, 25 Me. 209, 43 Am. Dec. 265, and note and cases; Wood v. Edes, 2 Allen 578; Bliss v. Kennedy, 43 Ill. 67; Evans v. Merriweather, 3 Scam. (Ill.) 492, 38 Am. Dec. 106; Keeney Mfg. Co. v. Union Mfg. Co., 39 Conn. 576;

54—Vol. I.—Kin. on Irr.

Hartzall v. Sill, 12 Pa. St. 248; Pugh v. Wheeler, 19 N. C. (2 Dev. & B.) 50; Tyler v. Wilkinson, 4 Mason 397, Fed. Cas. No. 14,312; Gould v. Barton Duck Co., 13 Gray, 450; Merritt v. Brinkerhoff, 17 Johns. 306; Mason v. Hill, 5 B. & Ad. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; Wright v. Howard, 1 Sim. & Stuart 190; Sampson v. Hoddinott, 1 C. B. N. S. 590, 87 E. Cl. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 5 Week. Rep. 230; Chasemore v. Richards, 2 H. & N. 181, 11 Eng. Reprint 140; Bealy v. Shaw, 6 East. 208, 102 Eng. Reprint 1266.

⁴ For the Arid Region Doctrine of Prior Appropriation, Chap. 31, Secs. 585-594.

See, also, 2 Bla. Com. 14; Cox v. Mathews, 1 Vent. 237; Liggins v. Inge, 7 Bing. 682, 20 Eng. C. L. 287; Sackrider v. Beers, 10 Johns. 241;

the language of Mr. Justice Story, in the case of *Tyler v. Wilkinson*:⁵ "There may be an appropriation by general consent or grant. Mere priority of appropriation of running water, without consent or grant, confers no exclusive right. It is not like the case of mere occupancy, where the first occupant takes by force of his priority of occupancy. That supposes no ownership already existing, and no right to the use already acquired."⁶ Also, in a

Goddard's *Law of Easements*, 250; *Mason v. Hill*, 5 B. & Ad. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; *Rutland v. Bowler*, Palmer, 290, 81 Eng. Reprint 1087; *Howard v. Wright*, 1 Shaw 64; *Van Bergen v. Van Bergen*, 3 Johns. Ch. 282, S. C., 8 Am. Dec. 511.

Goddard in his *Law of Easements*, p. 251, declares: "That all riparian owners of natural streams have a riparian right to the use of water as it flows past their land, as long as they do not interfere with the natural rights of other riparian owners, and to sue for disturbance is now an established doctrine of law." . . . He adds: "The doctrine (of appropriation) was not established until comparatively modern times," etc. He states, after referring to some of the early decisions, that the theory of appropriation was much modified by various decisions, "as the nature of riparian rights was brought more fully under consideration." He concludes: "Appropriation of the water of flowing streams has thus gradually fallen from being considered the means of acquiring important rights to being deemed of *no importance whatever*."

See 32 Edward III; Angell on *Water Courses*, 93; *Year Book*, 14 Henry VIII, 31.

In *Chasemore v. Richards*, 7 H. L. Cases 384, Lord Wensleydale declares: "We may consider, therefore, that this proposition is indisputable, that the right of the proprietor to the en-

joyment of a water course is a natural right, and is not acquired by occupation"; *Shury v. Piggot*, 3 Blust. 339, Popham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280; *Countess of Rutland v. Bowler*, Palmer, 290, 81 Eng. Reprint 1087; Washburn on *Easements and Servitudes*, 319, and cases cited.

See, also, *Bealey v. Shaw*, 6 East. 208, 2 Smith 321, 102 Eng. Reprint 1266; *Holker v. Porritt*, L. R. 10 Exch. 59, 44 L. J. Exch. 52, 33 L. T. N. S. 125, 23 Week. Rep. 400, affirming *Id.*, L. R. 8 Exch. 107, 42 L. J. Exch. N. S. 85, 21 Week. Rep. 414; *Frankum v. Falmouth*, 20 Eng. C. L. Rep. 526, 6 Car. & P. 529, 2 Ad. & El. 452, 4 L. J. K. B. N. S. 690; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Embrey v. Owen*, 6 Exch. 252, 20 L. J. Exch. 212, 15 Jur. 633; *Ewing v. Colquhoun*, 2 App. Cas. 839; *McGlone v. Smith*, 22 L. R. Ir. 586; *Webb v. Portland Cement Co.*, 3 Sum. 189, Fed. Cas. No. 17,322; *Wilts etc. Co. v. Swinton Water W. Co.*, 9 Ch. 457; *Id.*, S. C. L. R. 7 H. L. 697; *McCartney v. Londonderry*, R. App. Cas. 1904, 301; *White v. White*, App. Cas. 1906, 81; *Lyon v. Fishmongers' Co.*, 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1.

⁵ 4 Mason 397, Fed. Cas. No. 14,312.

⁶ See, also, the opinion of the same learned judge in *Whipple v. Cumberland Mfg. Co.*, 2 Story (Cir. Ct.)

North Carolina case Mr. Chief Justice Ruffin said: "There is no prior or posterior right in the use, for the land of each enjoyed it alike from the origin of the stream, and the priority of a particular new application or artificial use of the water does not, therefore, create the right to that use."⁷ Again, in the case of *Dumont v. Kellogg*,⁸ that great expounder of the law, Mr. Justice Cooley, said: "We may dismiss from our mind the fact that the plaintiff has first

661. There is, however, a class of English cases which seem to hold to the contrary of the above rule, evidently upon the theory of the civil law as laid down by the earliest authorities upon the subject. These cases are notably, *Bealey v. Shaw*, 6 East 208, 2 Smith 321, 102 Eng. Reprint 1266; *Saunders v. Newman*, 1 B. & Ad. 258, 106 Eng. Reprint 95; *Williams v. Morland*, 2 Barn & C. 910, 107 Eng. Rep. 620, 915; *Cox v. Mathews*, 1 Vent. 137.

But, so far as we can see, this principle was never approved in America to any great extent. However, see *Hatch v. Dwight*, 17 Mass. 289, 10 Am. Dec. 145; and opinion of Duncan, J., in case of *Strickland v. Todd*, 10 S. & Rawle's 69, who in construing the following passage of Blackstone: "If a stream of water is unoccupied, a person may erect a mill thereon and detain the water yet not so as to injure his neighbor's prior mill, for he has by first occupancy acquired a property in the current" (2 Blackstone Com. 403), said: "My own opinion is, that this doctrine ought not to be applied here."

Had this rule been adopted, it would have thrown to the ground the fundamental principles of the common law relating to running water, and all the leading cases respecting the usufructuary rights of riparian proprietors. As Chief Justice Thompson of the Supreme Court of New York

said in the case of *Platt v. Johnson* (15 Johns. N. Y. 213, 8 Am. Dec. 233), "to give such an extension to the doctrine of occupancy would be dangerous and pernicious in its consequences. The elements," he adds, "being for general and public use, where the benefit is appropriated to individuals by occupancy this occupancy must be regulated and guarded with a view to the individual rights of all who have an interest in its enjoyment, and the maxim, *sic utere tuo ut alienum non laedas*, must be taken and construed with an eye to the natural rights of all."

⁷ *Pugh v. Wheeler*, 2 Dev. & B. (N. C.) 55.

See, also, *Heath v. Williams*, 25 Me. 209, 43 Am. Rep. 265, and note; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Platt v. Johnson*, 15 Johns. 213, 8 Am. Dec. 233; *Gilman v. Tilton*, 5 N. H. 231; *Hartzall v. Sill*, 12 Pa. St. 248; *Gould v. Boston Duck Co.*, 13 Gray 442; *Wood v. Edes*, 2 Allen 578; *Parker v. Hotchkiss*, 25 Conn. 321; *Snow v. Parsons*, 28 Vt. 450, 67 Am. Dec. 723; *Bliss v. Kennedy*, 43 Ill. 67; *Cowles v. Kidder*, 24 N. H. 364, 57 Am. Dec. 287; *McCarter v. Hudson etc. Co.*, 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S., 197, 118 Am. St. Rep. 754, 10 Am. & Eng. Cas. 118, affirmed 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529.

⁸ 29 Mich. 420, 18 Am. Rep. 102.

put the waters of the stream to practical use, since that fact gave him no superiority in right over the defendant. The settled doctrine is now that priority of appropriation gives to one proprietor no superior right to that of the others, unless it has been continued for a period of time, and under such circumstances, as would be requisite to establish rights by prescription."⁹

Coming down to the Western States of this country, which adhere to the common law of riparian rights as one of the systems governing waters and water rights, we find that in construing such rights the Courts adopt the present rule in England to the effect that there is no priority of right as between riparian owners upon the same stream, but that their rights are equal or correlative without regard to the time of the settlement of the land adjoining the stream or of the time of the first use of the water. In the case of *Lux v. Haggin*¹⁰ it is said: "In examining the numerous cases which establish that the doctrine of appropriation is not the doctrine of the common law, we meet an embarrassment of abundance." And in a leading case in Oregon¹¹ it is said: "There is no such thing as a prior riparian ownership, so far as distribution of water for irrigation purposes between riparian owners is concerned."¹² In the case of *Williams v. Altnow*¹³ it was said: "But in this respect the rights of all the riparian proprietors are equal, regardless of location on stream, or date of acquiring title. There can be no priority of rights as between riparian proprietors. The right of the first settler is not superior to that of the last."

⁹ See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

As to Western American Doctrine, see Secs. 585-626.

¹⁰ 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

¹¹ *Hough v. Porter*, 51 Ore. 318, 372, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728.

¹² See, also *Lone Tree Ditch Co. v.*

Cyclone Ditch Co., 26 S. D. 367, 128 N. W. Rep. 596; *Id.*, 15 S. D. 519, 91 N. W. Rep. 352; *Williams v. Altnow*, 51 Ore. 275, 95 Pac. Rep. 200, 97 Pac. Rep. 539.

For priority of right as between riparian owners and appropriators, see Secs. 810-823.

¹³ 51 Ore. 275, 95 Pac. Rep. 200, 97 Pac. Rep. 539.

CHAPTER 26.

IRRIGATION AS A RIPARIAN RIGHT.

- § 498. Scope of chapter.
- § 499. Use of water for irrigation a natural or artificial want—Upon principle.
- § 500. Use of water for irrigation a natural or artificial want—The common law classification.
- § 501. Early English doctrine.
- § 502. Later English doctrine.
- § 503. Early Eastern American doctrine.
- § 504. Later Eastern American doctrine.
- § 505. Later Eastern American doctrine—Chancellor Kent's opinion.
- § 506. Later Eastern American doctrine—Conclusions.
- § 507. Western American doctrine versus the doctrine of appropriation—Classification of States.
- § 508. Western American doctrine—California rule.
- § 509. Western American doctrine—Enlargement of the common law.
- § 510. Western American doctrine—Extent to which water may be diverted.
- § 511. Western American doctrine—Extension of the rule of "reasonable use."
- § 512. Western American doctrine—Reasonable use of water for irrigation by riparian proprietors.
- § 513. Correlative rights of the several proprietors.
- § 514. What lands may be irrigated by a riparian proprietor—Must be riparian and lie within the watershed of the stream.
- § 515. What lands may be irrigated—The question of title to different adjoining tracts.
- § 516. Nonriparian owner has no right.
- § 517. Riparian owner has no right to irrigate nonriparian land.
- § 518. Priority of use gives owner no exclusive right.
- § 519. Riparian owner and prior appropriator at the same time.
- § 520. Manner of taking the water.
- § 521. Change in manner of taking the water—Change of use.
- § 522. Surplus water must be returned to the natural stream.
- § 523. Mere possession without title gives no riparian right.
- § 524. Right to water in artificial water courses.
- § 525. Conclusions.

§ 498. **Scope of chapter.**—In the previous chapters of this part we have discussed the common law theories of riparian rights.¹ In

¹ See Chaps. 21-25, Secs. 450-497.

the following part we will discuss the rights in waters and water courses under the civil law of the Romans, and how that law, as modified by various nations, was introduced into different portions of this country and still forms the basis of many of our laws upon the subject of waters.²

In this chapter we will endeavor to show how in certain States the old common law rule of England has been modified and changed to the extent of instead of enforcing the strict rule of the common law as it is known in England and some of our Eastern States, to the effect that the waters must be permitted to run in their natural channels, and undiminished in quantity and undeteriorated in quality, they may, under certain conditions and limitations, even under the common law, as modified, be diverted from the natural channels and applied to the irrigation of the soil.³ In another portion of this work we will show how in other States, owing to the peculiar physical conditions of the country, the common law upon the subject of water has been entirely abrogated, either by statute or by Court decision, and what is known as the "Arid Region Doctrine" of appropriation has been substituted in its stead.⁴

§ 499. Use of water for irrigation a natural or artificial want—Upon principle.—There has been a great deal of academic discussion among the Courts and others as to whether the use of water for irrigation was to supply a natural or an artificial want; and the authorities upon the subject seem to differ considerably. The distinction between "natural" and "artificial" wants is the basis for the common law distinction between the use of water for "ordinary" and "extraordinary" purposes, discussed in previous sections.¹ As these terms are applied under the common law rules, "natural wants" may be supplied by the "extraordinary" use of the waters of a stream;² while upon the other hand, the "artificial wants" must be supplied by the reasonable use of the water, these latter being secondary in right of use to the first. In other words, the first class belong to those uses which are absolute necessities, and the latter class of uses belong to those which simply

2 See Chaps. 29, 30, Secs. 552-584.

3 See Secs. 507-516.

4 See Chap. 31, Secs. 585-594.

1 See Secs. 486-491.

2 See Secs. 486-490.

add to the profit, comfort, convenience, or the prosperity of the proprietor.³ The difficulty into which the Courts in rendering the decisions upon this subject have fallen seems to have been from endeavoring to apply the common law principles of uses for natural and artificial wants to mixed classes of these wants of the water, and also to apply the same to the peculiar conditions of the respective localities and jurisdictions where the decision was rendered, as the only criterion.⁴

- It must be borne in mind that the physical conditions of different portions of our country differ greatly. We have localities where the rainfall is so great that there is no question upon the subject of sufficient moisture to raise crops, but the principal question, relative to water in these localities, which comes before the Courts, is that of drainage. Upon the other hand, we have localities with exceedingly rich soil, which are so hot and dry and so absolutely devoid of moisture that were they without irrigation ten acres would produce enough to give a horned toad but a scanty livelihood. But with irrigation they will produce such crops of all kinds as are a surprise to the world, and especially to the Eastern farmers. It must also be borne in mind that due largely to this difference in conditions two separate and distinct systems of water rights have grown up in different portions of the country, and even in different portions of this Western country: One, the Arid Re-

³ See *Union Mill & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Gould on Waters*, Secs. 205-209; *Miner v. Gil-mour*, 12 Moore P. C. C. 121, 7 Week. Rep. 328, 14 Eng. Reprint 861.

See, also, *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728, where the Court classifies water for the proper irrigation of such garden produce as may be necessary for the proper sustenance of a settler and his family among the absolute necessities, and hence a natural want.

⁴ "This subject has been confused needlessly by the unfortunate use of the words 'natural' and 'ordinary' in this connection to distinguish those

uses which the common law does not attempt to limit, and 'artificial' and 'extraordinary' to designate those which are required to be within reasonable bounds." *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

See, also, on same subject, *Brown v. Collins*, 63 N. H. 442, 16 Am. Rep. 372; *Crawford Co. v. Hathaway*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634; *Rogers v. Overacker*, 4 Cal. App. 333, 87 Pac. 1107.

See, also, for ordinary and extraordinary uses, Secs. 486-491.

gion Doctrine of appropriation, based upon the priority of the appropriation of water for beneficial uses; and the other, the common law doctrine, whose basis is equality of use between all those who own lands bordering upon the streams, and that, too, regardless of the question as to whether the use of water for irrigation comes within the class of natural or artificial wants, discussed in the preceding sections.⁵ We will say that man, in order to supply even his natural wants, must eat, as well as drink. And, in our opinion, it is left to the Court of the State where water is not needed to any extent for irrigation to make the correct distinction. The Supreme Court of Illinois, in the case of *Evans v. Merriweather*,⁶ after holding that in that State the use of water for irrigation was to supply an artificial want, and not absolutely necessary to man's existence, said: "*In countries differently situated from ours with a hot and arid climate water doubtless is indispensable for the cultivation of the soil, and in these water for irrigation would be a natural want.*" And upon the question of the difference in conditions in portions of the West, and even in different portions of the same State, the California Court, in the case of *Lux v. Haggin*,⁷ said: "It may be that, under the physical conditions existing in some portions of the State, irrigation is not, theoretically, a 'natural want' in the sense that living creatures can not exist without it; *but its importance as a means of producing food from the soil makes it less necessary, in a scarcely appreciable degree, than the use of water by drinking it.*" Again, as was said in a much later California case:⁸ "In an arid country water for irrigation may become a natural want of man, as exigent as when needed for domestic purposes, since without it vegetation would cease, and the sources of life be indirectly destroyed."⁹

Hence, as a conclusion from the above argument, it must follow that it depends entirely upon the climatic and physical conditions of the locality where the question is raised, whether or not the use of water for irrigation is a natural or artificial want. In England and in the Eastern States, and in some localities of the West,

⁵ See Secs. 486, 487.

⁶ 3 Scam. (Ill.) 492, 38 Am. Dec. 106.

⁷ 69 Pac. Rep. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁸ *Wiggins v. Muscupiabe Land &*

W. Co., 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337.

⁹ See, also, late case of *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728.

the use of water for irrigation may be regarded as an artificial or extraordinary use.¹⁰ And, upon the other hand, in the arid portions of the country, where irrigation is absolutely necessary in order to raise any crops, upon principle, the use of water must be regarded as a natural want.¹¹

§ 500. **Use of water for irrigation a natural or artificial want—The common law classification.**—What we have said in the preceding section are our views as to the use of water for irrigation being a natural or an artificial want, as based upon principle and common sense.¹ There is no more reason in holding that a person can consume the flow of the entire stream in order to furnish water for drink for a family and for cattle than there is that he can consume it for the purpose of irrigating a small patch of garden, where the absolute necessity requires it in order to supply food for the same household. They both tend to fill the immediate necessities of life.

But when we come to the common law classification, even in the Western States, of the right to the use of water for irrigation, we find it almost always classified as an artificial want calling for an extraordinary use of the water. Therefore, among riparian owners, under the strict construction of the common law doctrine, the use of water for irrigation is an extraordinary use, and is beyond question a use to supply an artificial want. All the rights of the riparian proprietors upon the same stream are equal; and, after having had their natural wants supplied, and there is still water

¹⁰ *Miner v. Gilmour*, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Rep. 821; *Evans v. Merriweather*, *supra*; *Garwood v. New York Cent. R. Co.*, 83 N. Y. 400, 38 Am. Rep. 452; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678, where the Court said: "A diversion of water for irrigation is not an ordinary use, and can only be exercised reasonably and with proper regard to the rights of other proprietors to apply the water to the same purposes"; *Baker v. Brown*, 55 Tex. 377.

¹¹ *Lux v. Haggin*, *supra*; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631; *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540; *Mud Creek Irr. A. & M. Co. v. Vivian*, 74 Tex. 170, 11 S. W. Rep. 1078; *Barrett v. Metcalf*, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758.

As to portions of Texas not arid, see *Baker v. Brown*, 55 Tex. 377.

See, also, *Bear River & A. W. Co. v. New York M. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526.

¹ See Sec. 499.

in the stream, they have all an equal right to use the surplus for any artificial purpose or want, including that for the irrigation of lands.² And in those States which hold to the common law, rule, it is held that where the water is insufficient to supply all the natural wants, the use for irrigation by one proprietor must be held in subordination to the use for domestic purposes and for drink for man and beast.³

The common law distinction discussed above is well set forth in a recent Oregon case⁴ in the following language: "For domestic use, including water not only for his household, but also for such animals as are essential for the proper sustenance of his family, the upper riparian owner may take so much of the water of a natural stream as may be necessary for that purpose, although none may be left for the lower riparian owners. So far the use is grounded on actual necessity. But irrigation is not so essentially a vital requirement, and riparian use for that purpose is limited

² For the Arid Region Doctrine of Appropriation, see Chap. 31, Secs. 585-594.

³ *Nielson v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910, where it is said: "Appellant had the right to make free use of this water, whether it came from a spring on his land or otherwise, for the ordinary domestic purposes; but we do not think that irrigation, at least when conducted in the manner that this was, can constitute a use which will justify an upper riparian owner in taking all of the water, to the destruction of the ordinary domestic uses thereof by a riparian owner below, in the absence of prior legal appropriation." Citing *Nesalhou v. Walker*, 45 Wash. 621, 88 Pac. Rep. 1032; *Smith v. Corbit*, 116 Cal. 587, 48 Pac. Rep. 725; *Shotwell v. Dodge*, 8 Wash. 337, 36 Pac. Rep. 254; *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *Union Mill Co. v. Ferris*, 2 Sawy. (U. S.) 176, Fed. Cas. No. 14,371, 8 Morr. Min.

Rep. 90; *Howe v. Norman*, 13 R. I. 488; *Brosnan v. Harris*, 39 Ore. 148, 65 Pac. Rep. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; *Ellis v. Tone*, 58 Cal. 289; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Lord v. Meadville Water Co.*, 135 Pa. 122, 19 Atl. 1007, 8 L. R. A. 202, 20 Am. St. Rep. 864; *Pomeroy on Water Rights*, Sec. 134; *Gould on Waters*, Secs. 205, 536.

See, also, *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Wiggins v. Muscupiabe L. & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *Gillett v. Johnson*, 30 Conn. 180; *Lone Tree Ditch Co. v. Cyclone Ditch Co.*, 15 S. D. 519, 91 N. W. Rep. 352; *Id.*, 26 S. D. 307, 128 N. W. Rep. 596.

⁴ *Caviness v. La Grande Irr. Co.*, — Ore. —, 119 Pac. Rep. 731.

at all times by the condition that it must be so exercised as not to materially injure the rights of other riparian owners in the proportional use of the water of the same stream for the irrigation of their riparian lands. On the other hand, an appropriator, subject to rights in existence at the time his appropriation is made, may take all the water he can use reasonably and without waste for a beneficial project, although it may be the lion's share and none may be left for those who come afterward. In other words, a riparian owner using water in that capacity is, in a sense, always a tenant in common with other riparian owners on the same stream whose rights, at least for irrigation, he is bound not to injure materially by his riparian use of the water. The appropriator, however, is always a tenant in severalty, owing no duty or respect to those endeavoring to use the water by title subsequent to his own." In many of the States, by statutory enactment, an order of preference rights to the use of water is fixed, usually giving the first right to the purpose of domestic uses.⁵

§ 501. **Early English doctrine.**—In England the use of water for the purpose of irrigation is practically unknown, especially as compared with its use for that purpose in the United States, or even in some of the British Provinces, notably India,¹ Australia,² Egypt,³ South Africa,⁴ or even in her possessions in America—Canada and the Northwest Territories.⁵ That country having small rivers, and a damp, humid climate with plenty of rainfall, has never found it necessary to use the water in her natural streams for the purposes of irrigation as have certain portions of the United States. But, as England is the source from which we obtain the principles of law known in the history of jurisprudence as the common law, we naturally turn to that country to learn what were her ideas upon the subject of irrigation and her rules governing the same. Owing to the comparatively unknown practice of irri-

⁵ For the subject of preference rights to the use of water, see Secs. 791-794.

¹ For irrigation in India, see Chap. 5, Secs. 103-118.

² For irrigation in Australia, see Chap. 6, Secs. 119-130.

³ For irrigation in Egypt, see Chap. 4, Secs. 88-102.

⁴ For irrigation in South Africa, see Chap. 7, Secs. 131-143.

⁵ For irrigation in Canada, see Chap. 10, Secs. 177-237.

For irrigation in the Northwest Territories, see Chap. 10, Secs. 181-201.

gation in England, we find that the cases decided in that country are few as compared with the number of decisions in this country, in which the controversy has been in respect to the diversion of water from a water course for the purpose of irrigating land, and also that the English law upon this subject is today unsettled. Nevertheless, the authorities seem to agree upon two propositions, and these are, that the water of a natural stream can not be so diverted to the material diminution of the quantity of water which naturally flows in the water course by one riparian proprietor to the prejudice and injury of the rights of any of the others; and, that the water must not be diverted at all, unless it be again returned into the water course with no other diminution than that caused by absorption and evaporation.⁶

In a case cited by Mr. Angell in his work on "Water Courses" ⁷ an action was brought for the disturbance of a water course and the plaintiff was nonsuited, on the ground that the water after being used for irrigation was returned to the channel. But afterward the Court of King's Bench set aside the nonsuit, because it was shown that a portion of the water was lost by the process of evaporation and absorption. This case would seem to hold that the common law did not recognize at all the right to use the water of natural streams for the purpose of irrigation, for without the loss of some portion of the water by absorption and evaporation its use for that purpose would be a physical impossibility.⁸ So also in all the decisions of England, although the term "natural and artificial wants" does not seem to be used, the Courts hold that the use of water for the purpose of irrigation, if permitted to be exercised at all, can only be exercised by one riparian pro-

⁶ *Greenslade v. Halliday*, 6 Bing. 379, 4 Moore & P. 71, 8 L. J. C. P. 124; *Strutt v. Bovington*, 5 Esp. 56; *Hall v. Swift*, 6 Scott 167, 4 Bing. N. C. 381, 1 Arnold 157, 7 L. J. C. P., N. S. 209.

⁷ See Sec. 120.

⁸ See *Chasemore v. Richards*, 7 H. L. Cas. 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming *Id.*, 2 Hurlst. & N. 168; *Em-*

brey v. Owen, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Sampson v. Hoddinot*, 1 Com. B. N. S. 590, 87 E. C. L. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 5 Week. Rep. 230; *Mason v. Hill*, 5 B. & Ad. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472.

prietor so that the rights of any of the other proprietors will not be prejudiced or infringed upon.⁹

§ 502. **Later English doctrine.**—The present English law upon the subject is much more liberal in the use of water for irrigation than the earlier cases cited in our last section. However, as late as 1859, the English Courts were reluctant to change their position upon the subject, although in America the old common law rule in this respect had been considerably modified. In the case of *Chasemore v. Richards*¹ Lord Wensleydale (Baron Parke), after discussing the case of *Wood v. Waud*,² in which it was said that a very liberal use of a stream for the purpose of irrigation was permitted in America, said: "It is not clear that a user, to that extent, would be permitted; nor do we mean to lay down that it would in every case be deemed a lawful enjoyment of the water if it was again returned into the river with no other diminution than that which was caused by absorption and evaporation attendant on the irrigation of lands of the adjoining proprietor. This must depend upon the circumstances of each case." And he held that it was a matter of correlative rights among the various owners upon the stream. That, upon the one hand, it could not be permitted that the owner of a tract of many thousands of acres of porous soil, abutting on one part of the stream, could be permitted to irrigate them continually by canals and drains, and so cause a serious diminution of the quantity of the water, though there was no other loss to the natural stream than that arising from the necessary absorption and evaporation of the water employed for that purpose; on the other hand, one's common sense would be shocked by supposing that a riparian owner could not dip a water-

⁹ *Greenslade v. Halliday*, 6 Bing. 379, 14 Moore & P. 71, 8 L. J. C. P. 124; *Strutt v. Bovington*, 5 Esp. 56; *Hall v. Swift*, 6 Scott 167, 4 Bing. N. C. 381, 1 Arnold 157, 7 L. J. C. P. N. S. 209; *Chasemore v. Richards*, 7 H. L. Cases 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming 2 Hurlst. & N. 168; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Sampson v. Hoddinot*, 1 Com. B. N. S. 590,

87 E. C. L. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 5 Week. Rep. 230; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Gale and Wash. on Easements*, 284; *Domat. Pub. Law*, 1, 2, 8, 11.

¹ 7 H. L. Cas. 349, 29 L. J. Exch. N. S. 81, 5 Jur. N. S. 873, 7 Week. Rep. 685, affirming 2 Hurlst. & N. 168.

² 3 Exch. 748, 13 Jur. 472, 18 L. J. Exch. N. S. 305.

ing pot into the stream in order to water his garden, or allow his family or his cattle to drink of it. He further held that it was entirely a question of degree, and that it was very difficult, and indeed impossible, to define in a general rule the precise limits which separate the reasonable and the permitted use of the stream for this purpose from its wrongful application; but that there was no difficulty in deciding whether a particular case falls within the permitted limits or not. In other words, the question depended entirely upon the facts of each particular case. That the right to have the stream flow in its natural state, without diminution or alteration, was an incident to the property through which it passes; that the water was *publici juris* in the sense only that all may reasonably use it who have the right of access to it. But he also held that the right to the benefit and advantage of the water flowing past the land of a riparian owner was not an absolute and exclusive right to the flow of *all the water* in its natural channel and in its natural state; but it was a right only to the flow of the water and the enjoyment of it, subject to the similar rights of all the proprietors of the bank of each side of the stream to the reasonable enjoyment of the same gift of Providence. It is only, therefore, for an *unreasonable and unauthorized use* of this common benefit that an action will lie; but for such a use it will. This case may be considered the opening wedge for the modern English doctrine upon the subject of the use of the waters of a stream for the purpose of irrigation, under the common law. But in America, owing to the different conditions, a much broader rule was being adopted upon the subject, even in our Eastern States, as we shall see in the next sections. And the rule which was established in the Eastern portion of the United States, was afterward adopted in England, to the effect that the right of irrigation is a common law right of a riparian owner, still, however, to a limited extent, provided that no injury is done to the other riparian owners.³ Under this rule no exclusive right to the water can be obtained, but the right must be common to all of the riparian owners.

³ Swinton Waterworks Co. v. Wilts etc. Co., L. R. 7 H. L. 697, 45 L. J. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 284; Embrey v. Owen, 6 Exch. 352, 20 L. J. Exch. N. S. 212,

15 Jur. 633, where the Court held that no action will lie for taking an inappreciable amount of water from a stream for the purpose of irrigation.

§ 503. **Early Eastern American doctrine.**—During the early history of this country, when the population was comparatively sparse, even in the Eastern States, the right of a riparian proprietor to divert the water from a natural stream and use it for the purpose of irrigation was recognized to a considerable latitude. It was even held at this period that the diversion of water for this purpose, by a riparian proprietor, was to supply a natural want.¹ One of the earliest cases in this country upon this subject is that of *Perkins v. Dow*,² and in that action it was decided by the Supreme Court of Connecticut that a riparian proprietor may take the water from a stream running through his land to fertilize his meadows; provided that he does not deprive the adjoining proprietors below of a sufficiency of water for kitchen purposes, or for watering their cattle; and provided the water which is diverted for irrigation shall (*unless absorbed on the land*) be returned to its natural channel before the stream leaves his land. And if a person by absorption on his own land can dispose of the whole of the water, excepting only a bare sufficiency for the purposes before mentioned, he has the prior right because he is first on the stream and has the first opportunity. Also, in the case of *Weston v. Alden*,³ the Supreme Court of Massachusetts held that, "A man owning a close on an ancient brook may lawfully use the water thereof for the purposes of husbandry, as watering his cattle or irrigating his close; and he may do this either by dipping water from the bank and pouring it upon the land or by making small sluices for the same purpose; and if the owner of a close below is damaged thereby it is *damnum absque injuria*." This case essentially holds that the upper riparian proprietor on a stream has a right to use all the water of a stream without any regard to the wants of those below, and not even leaving enough in the stream for their "domestic purposes." That such was not the English rule has been shown above, and that such was not the later rule of the Eastern States which have adopted the common law upon this subject will be seen in the following section.

1 Gould on Waters, 2d Ed., Sec. 205.

See, also, *Perkins v. Dow*, 1 Root (Conn.) 537; *Weston v. Alden*, 8 Mass. 136, 8 Morr. Min. Rep. 82; *Hayward v. Mason*, 1 Root (Conn.) 537;

Blanchard v. Baker, 8 Greenl. (Me.) 253, 23 Am. Dec. 504.

For irrigation as a natural or artificial want, see Secs. 499, 500.

² *Supra*.

³ *Supra*.

§ 504. **Later Eastern American doctrine.**—As the Eastern States became more thickly settled and the demand for water became greater the same States which had formerly allowed a very liberal use of water for the purpose of irrigation gradually restricted that use, until they had practically adopted all the common law rules upon the subject. And, according to the later decisions of the common law authorities of this country, this use of the water comes properly under the head of extraordinary uses, to supply an artificial want; and the use of the stream for this purpose by one riparian proprietor upon the same must be reasonable and must not materially injure or affect the rights of any of the other riparian proprietors upon the same stream.¹ In regard to the early Connecticut decisions, cited in our last section,²

1 Colburn v. Richards, 13 Mass. 420, 7 Am. Dec. 160; Cook v. Hull, 3 Pick. 269; Anthony v. Lapham, 5 Pick. 175; Blanchard v. Baker, 8 Greenl. (Me.) 253, 23 Am. Dec. 504.

In Baker v. Brown, 55 Tex. 377, the Court held: "That the right to use the water for the purposes of irrigation, when its use is not indispensable, but is resorted to for the purpose of increasing the products of the soil, must be subordinate to the rights of a co-proprietor to supply his natural wants, and those of his family, tenants, and stock by using the water for necessary domestic purposes. Davis v. Getchell, 50 Me. 602, 79 Am. Dec. 636, where it was held that a diversion of a large portion of the waters of a stream, by a proprietor of land through which the water course ran, rendered him liable to an action on the case by a proprietor of land below, from whom the water is thus diverted; although the latter thereby sustains no present actual damage.

See, also, Newhall v. Iverson, 8 Cush. 595, 54 Am. Dec. 790; Elliot v. Fitchburg Ry. Co., 10 Cush. (Mass.) 191, 57 Am. Dec. 85; Paine v. Woods, 108 Mass. 160; Garwood v. N. Y. Cent. Ry. Co., 83 N. Y. 400, 405, 38

Am. Rep. 452; Farrell v. Richards, 30 N. J. Eq. 511; Union Mill Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; Ingraham v. Hutchinson, 2 Conn. 584; Wadsworth v. Tillotson, 15 Conn. 366, 39 Am. Dec. 391; Gillett v. Johnson, 30 Conn. 180; Randall v. Silverthorn, 4 Pa. St. 173; Miller v. Miller, 9 Pa. St. 74, 49 Am. Dec. 545; Tolle v. Correth, 31 Tex. 362, 98 Am. Dec. 540, note, and cases cited; Fleming v. Davis, 37 Tex. 173; Mud Creek Irr. Co. v. Vivian, 74 Tex. 170, 11 S. W. Rep. 1078; Stein v. Burden, 29 Ala. 127, 65 Am. Dec. 394; *Id.*, 24 Ala. 130, 60 Am. Dec. 453, 27 Ala. 104; Blessing v. Blair, 45 Ind. 546; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Learned v. Tangeman, 65 Cal. 334, 4 Pac. Rep. 191; Ferrea v. Knipe, 28 Cal. 340, 87 Am. Dec. 128; Perego v. Sellick, 79 Cal. 568, 21 Pac. Rep. 966; Sharp v. Hoffman, 79 Cal. 404, 21 Pac. Rep. 846; Heath v. Williams, 25 Maine 209, 43 Am. Dec. 265, note, and cases cited; Gould on Waters, Sec. 217.

2 Perkins v. Dow, 1 Root (Conn.) 535; Howard v. Mason, 1 Root (Conn.) 537, 2 Swift's Dig. 87.

in the opinion of Mr. Chief Justice Swift, rendered in the later case of *Ingraham v. Hutchinson*,³ they reverse the common law, and are repugnant to a statute of that State in affirmance of that law. The Judge, in giving the opinion of the Court, and referring directly to the cases cited above, says: "It was decided that a man may divert a stream of water to manure and enrich his meadows, to the prejudice of a mill that had been erected on the stream below more than twenty years. This is reversing the common law, and not only gives to the upper proprietors on rivers the advantages to which the lower are entitled, but denies that even seventy years' exclusive enjoyment of water, in a particular manner, will confer an absolute right." This rule, restricting the use of water for irrigation, is especially true when the rights of other riparian proprietors for the purpose of supplying their natural wants and domestic necessities, or to irrigate their own lands, are invaded, unless the first irrigator has gained the right in some mode known to law, as by grant or prescription. In other words, at common law the right to use water for irrigation is subordinate to the natural wants and equal with all other artificial wants, and is so restricted and hemmed in by the rules of that law that its practice, as the same is known in the arid regions of the United States, is rendered almost an impossibility.

In a still later Connecticut case, that of *Gillett v. Johnson*,⁴ the Court thus speaks of the right of the defendant to use the water of a stream to irrigate lands, as limited and restricted: "She was bound to apply the water in such a reasonable manner and quantity as not to deprive the plaintiff of a sufficient supply for his cattle. The claim of the defendant was, that she had a right to divert the whole for the purpose of irrigation, regardless of the rights of plaintiff. Such diversion was unreasonable and therefore illegal." Also in another case, decided by the Supreme Court of New York, the parties in which were owners of adjoining farms. On the farm of the defendant, within five or six rods of the land of the plaintiff; there was a spring, from which the water in its natural channel ran over the land of the plaintiff. The defendant diverted the water from the spring and caused it to flow upon his meadow for the purpose of irrigation, to the extent of three or four acres, for which diversion in the Court below the plaintiff recov-

³ 2 Conn. 584.

⁴ *Gillett v. Johnson*, 30 Conn. 180.

55—Vol. I—Kin. on Irr.

ered judgment. In rendering the opinion of the Supreme Court, on appeal, the Chief Justice said: "The defendant has a right to use so much as is necessary for his family and cattle, but he has no right to use it for irrigating his meadow if thereby he deprives the plaintiff of the reasonable use of the water in its natural channel." ⁵

§ 505. **Later Eastern American doctrine—Chancellor Kent's opinion.**—One of the most frequently quoted and respected American writers upon this subject is Chancellor Kent. Writing, as he did, at a comparatively early period in the history of American jurisprudence, and before statutory enactments and case law had invaded the precincts of the common law of England to any great extent in this country, and standing at the very head of his profession both as a law writer and expounder of the law, he certainly can be quoted as among the very highest authorities of his day upon this subject of the use of waters of natural streams and lakes by riparian proprietors. "Every proprietor," he says, "of lands on the banks of a river has naturally an *equal* right to the use of the water which flows in the stream adjacent to his lands, as it is wont to run (*currere solebat*), *without diminution or alteration*. No proprietor has a right to use the water to the prejudice of other proprietors above or below him, unless he has a prior right to divert it, or a title to some exclusive enjoyment. He has no property in the water itself, but a simple usufruct while it passes along. *Aqua currit et debet currere ut currere solebat* is the language of the law. Though he may use the water while it runs over his land as an *incident to the land*, he can not unreasonably detain it or give it another direction, and he must return it to its ordinary channel when it leaves his estate. Without the consent of the adjoining proprietors, he can not divert or diminish the quantity of water which would otherwise descend to the proprietors below, nor throw the water back upon the proprietors above, without a grant, or an uninterrupted enjoyment of twenty years which is evidence of it. This is the clear and settled doctrine upon the subject, and all the difficulty that arises consists in the application. The owner must so use and apply the water as to work no *material* injury or annoyance to his neighbor below him, who has an *equal right* to the sub-

⁵ Arnold v. Foot, 12 Wend. (N. Y.) 330.

sequent use of the *same water*; nor can he, by dams or any obstruction, cause the water injuriously to overflow the grounds and springs of his neighbor above him."

Then follows the passage that is often quoted to prove that water, under the common law, can not be employed for irrigation. It is as follows: "Streams of water are intended for the use and comfort of man; and it would be unreasonable and contrary to the universal sense of mankind to debar every riparian proprietor from the application of the water to domestic, *agricultural*, and manufacturing purposes, provided the use of it be made under *the limitations which have been mentioned*; and there will no doubt inevitably be, in the exercise of a perfect right to the use of the water, some evaporation and decrease of it, and some variations in the weight and velocity of the current. But, *de minimis non curat lex*, and a right of action by the proprietor below would not necessarily follow from such consequences, but would depend upon the nature and extent of the complaint or injury and the manner of using the water. All that the law requires of the party by or over whose land a stream passes is, that he should use the water in a reasonable manner, and so as not to destroy, or render useless, or *materially* diminish or affect the application of the water by the proprietors above or below on the stream." ¹

"The unquestioned rule of the common law was, that every riparian owner was entitled to the continued natural flow of the stream. It is enough, without other citations or quotations, to quote the language of Chancellor Kent." ²

§ 506. Later Eastern American doctrine—Conclusions.—As we have seen, according to a few of the earlier common law authorities of the United States the practice of irrigation seems to have been permitted under great latitude.¹ But this liberal doctrine was repudiated by the later common law authorities, and the right of a riparian proprietor to divert the waters of a stream running through his land was classified among those to supply his artificial wants, or those which were not absolutely necessary to his exist-

¹ Kent Com. 439, 440.

² Mr. Justice Brewer in *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup.

Ct. Rep. 770, quoting from above section from Kent.

¹ See *Early American Doctrine*, Sec. 503.

ence,² and could only be exercised in common with all the other proprietors whose lands touched upon the stream. As was said in the case of *Blanchard v. Baker*:³ "Although by the case of *Weston v. Alden*,⁴ the right of irrigation seems to be general and unlimited, yet subsequent cases have restrained it consistently with the enjoyment of the common bounty of Nature, by other proprietors, through whose land a stream has been accustomed to flow.⁵ And the qualification of the right, by these later decisions, is in accordance with the common law." And the rule, especially in the Eastern States of this country, that an owner of riparian land has the right to have the stream flow through his land in its natural state, without diminution of quantity or change of quality, is qualified by the limitation that each of such owners is entitled to the correlative right to a reasonable use of the water for agricultural purposes.⁶ But where the stream is small and does not furnish water more than sufficient to supply the natural wants of the different proprietors living on it, none of the proprietors can use the water for irrigation.⁷

It will be noticed that the law upon this subject in the Eastern States of this country is similar to the later English doctrine discussed in a previous section.⁸ This is to the effect that the water of a stream may be used for irrigation to a very limited extent. If the stream is large and there is plenty of water for all, until

² See Sec. 500.

³ 8 Greenl. (Me.) 253, 23 Am. Dec. 504.

⁴ 8 Mass. 136, 8 Morr. Min. Rep. 82.

⁵ Citing *Colburn v. Richards*, 13 Mass. 420, 7 Am. Dec. 160; *Cook v. Hull*, 3 Pick. 269, 15 Am. Dec. 208; *Anthony v. Lapham*, 5 Pick. (Mass.) 175.

⁶ *Ulbricht v. Eufaula Water Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A. 572, 11 Am. St. Rep. 72.

⁷ *Evans v. Merriweather*, 4 Ill. (3 Scam.) 492, 38 Am. Dec. 106; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Mastenbrook v. Alger*, 110 Mich. 414, 68 N. W. Rep. 212; *Farrell v. Richards*, 30 N. J. Eq. 511; *Baker*

v. Brown, 55 Tex. 377; *Stein v. Burden*, 29 Ala. 127, 65 Am. Dec. 394; *Id.*, 24 Ala. 130, 60 Am. Dec. 453, 27 Ala. 104; *Slack v. Marsh*, 11 Phil. 543; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631; *Fleming v. Davis*, 37 Tex. 173; *Elliot v. Fitchburg R. Co.*, 10 Cush. (Mass.) 191, 57 Am. Dec. 85; *Gillett v. Johnson*, 30 Conn. 180; *Colburn v. Richards*, 13 Mass. 420, 7 Am. Dec. 160; *Arnold v. Foot*, 12 Wend. (N. Y.) 330; *Messingers Appeal*, 109 Pa. 285, 4 Atl. Rep. 162; *Anthony v. Lapham*, 5 Pick. (Mass.) 175; *Miller v. Miller*, 9 Pa. 74, 49 Am. Dec. 545.

⁸ See for later English doctrine, Sec. 502.

some riparian proprietor objects upon a legal ground that some one of his rights upon the stream has been infringed upon, the water may be used by another proprietor for irrigating his land. If, upon the other hand, the stream is small and there is not water enough to supply all of the riparian proprietors their correlative rights in the stream, including that of using the water for irrigation, then no one proprietor has the right to use it for that purpose, if this use infringes upon the rights of the other owners. As was held in the English case of *Embrey v. Owen*,⁹ no action will lie for taking an *inappreciable amount of water for irrigation*; but the Court holds that an action would lie for taking an appreciable amount for that purpose.¹⁰ In addition to the above, many of the common law authorities hold that in case of any diversion of the water from a natural water course by one riparian proprietor, even without actual injury to any of the other riparian owners upon the stream, the common law authorities hold that a cause of action would lie against the diverter, on the ground that a right had been infringed upon. This is a doctrine powerfully sustained by the American common law authorities. Also, that for any purpose whatsoever, for any essential diminution of water which Nature directed should flow in a certain channel, the law will interfere;¹¹ for, as was said in the case of *Tillotson v.*

⁹ 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633

¹⁰ See, also, *Swinton Waterworks Co. v. Proprietors etc. Nav. Co.*, L. R. 7 H. L. 697, 45 L. J. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 282, where the Court held, under certain circumstances, and *provided no injury is done*, the water may be diverted for a time and used for irrigation by an upper riparian proprietor. *Sampson v. Hoddinott*, 1 C. B. N. S. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 87 E. C. L. 590.

¹¹ *Woodman v. Tufts*, 9 N. H. 91; *Boliver Mfg. Co. v. Neponset Mfg. Co.*, 16 Pick. 241; *Crocker v. Bragg*, 10 Wend. 260, where it was held that a stream of water can not be diverted from its natural course, without the

consent of the owner over or by whose land it passes, although such owner may not require the whole or any part of the water for his own use.

See, also, *Baldwin v. Caulkins*, 10 Wend. (N. Y.) 167; *Heath v. Williams*, 25 Me. 209, 43 Am. Dec. 265; *Whipple v. Cumberland Mfg. Co.*, 2 Story C. C. 661; *Branch v. Doane*, 17 Conn. 402, 18 Conn. 233; *Parker v. Griswold*, 17 Conn. 288; 9 L. R. A. 810, 42 Am. Dec. 739, note, and cases cited; *Lund v. New Bedford*, 121 Mass. 286, 290; *Chapman v. Thames Mfg. Co.*, 13 Conn. 269, 33 Am. Dec. 401; *Bliss v. Rice*, 17 Pick. 23; *Blanchard v. Baker*, 8 Greenl. (Me.) 253, 23 Am. Dec. 504; *Webb v. Portland Mfg. Co.*, 3 Sumn. 189 Fed. Cas. 17,322; *Newhall v. Iverson*, 8 Cush. 595;

Smith,¹² "It is a long established principle of the common law that wherever any act injures another's right, and would be evidence in future in favor of the wrongdoer, an action may be maintained for an invasion of a right without proof of any specific injury."¹³

It will be here noticed how inapplicable the strict common law rule of riparian rights is to an arid region. As a general thing lands are not irrigated by "inappreciable" amounts of water. It takes large quantities of water to irrigate any extent of arid land. And if the common law rule, as it is laid down by the later English and Eastern American authorities, were strictly enforced in a great portion of this Western country, there would be plenty of water for all of the riparian owners to drink, but there would be very little food to eat if they had to depend upon what they could raise without irrigation.

We will now take up the question of the riparian right to irrigate land under the Western American doctrine, or in those jurisdictions which still adhere to certain portions of the common law relative to waters, but where, in certain localities at least, in order to raise crops irrigation is necessary.

§ 507. Western American doctrine versus the doctrine of appropriation—Classification of States.—We have seen in former portions of this work,¹ that under the strict common law rule of riparian rights, as recognized and enforced by the English authorities and also by the Eastern States, a riparian owner is only permitted to use so much of the waters of a stream upon which

Stowell v. Lincoln, 11 Gray 434; Butman v. Hussey, 13 Me. 407; Monroe v. Stickney, 48 Me. 462; Cowles v. Kidder, 24 N. H. 364, 57 Am. Dec. 287; Bassett v. Sallsbury Mfg. Co., 28 N. H. 438; Gerrish v. New Market Mfg. Co., 30 N. H. 478; Amoskeag Mfg. Co. v. Goodale, 46 N. H. 53; Chatfield v. Wilson, 27 Vt. 670; Tutthill v. Scott, 43 Vt. 525, 5 Am. Rep. 301; Blumleigh v. Dawson, 1 Gilman 544; Hulme v. Shreve, 4 N. J. Eq. 3 (Green Ch.) 116; Ripka v. Sergeant, 7 Watts & S. 11; Miller v. Miller, 9

Pa. St. 74, 49 Am. Dec. 545; Delaware Canal Co. v. Torrey, 33 Pa. St. 143; Graver v. Sholl, 42 Pa. St. 58; Stein v. Burden, 24 Ala. 130, 60 Am. Dec. 453; Tootle v. Clifton, 22 Ohio St. 274, 10 Am. Rep. 732; Mitchell v. Barry, 26 Up. Can. Q. B. 416; Hendrick v. Cook, 4 Georgia 241; Tillotson v. Smith, 32 N. H. 90, 96, 64 Am. Dec. 355.

¹² 32 N. H. 90, 64 Am. Dec. 355.

¹³ But see Bullard v. Saratoga Mfg. Co., 77 N. Y. 525.

¹ See Secs. 484, 485, 489-491.

his land touches and in such a manner as will not materially diminish its quantity or alter its quality.² In previous sections of this chapter we have shown that this rule is especially true as to the diversion of the water for the purpose of irrigation.³ The rights of one proprietor in this respect are equal, or correlative, to use the more modern term, with the rights of all the other proprietors upon the stream. It will also be noticed that under the common law, English and Eastern American authorities, the Courts seem very reluctant to permit the use of the water at all for the purpose of irrigation. And, if the right is permitted, it always seems to the reader of the opinion as though the Court had strained a point to grant it. Coming to the arid and semi-arid regions of the United States, we find that all of the States formed out of these sections of the country adopted the common law of England as the foundation of their systems of jurisprudence, together with all of the common law theories of riparian rights. The fundamental principle of appropriation of water for beneficial purposes as originally established by the miners' customs has been adopted in all of the 18 States and Territories which are formed out of the arid and semi-arid regions. These States and Territories are Alaska, Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.⁴

To be sure, later, in some of these jurisdictions, it was decided by the legislatures, or by the Courts, that certain features of the common law were inapplicable to the arid conditions of certain sections of this country, and in those States the common law upon the subject of waters was directly abrogated and the Arid Region Doctrine of appropriation substituted in its stead.⁵ These latter States, seven in all, situated in the very heart of the arid region, followed the lead of Colorado in their abrogation of the common

² See Secs. 501-504.

For pollution of water, see Secs. 1129-1147.

³ See Secs. 500-506.

⁴ For the Arid Region Doctrine, see Chap. 31, Secs. 585-594.

For a discussion of the subject of

riparian rights under each State, see Part XIV, relating to the laws of the respective States, under the sections upon riparian rights.

⁵ For common law inapplicable to arid regions, see Secs. 588-594.

law as to this subject, and are Arizona, Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming.⁶

Other States situated either in the semi-arid region of the Middle West or on the extreme Western coast have adhered to the common law of riparian rights, and at the same time have adopted and enforced the Arid Region Doctrine of appropriation of water for beneficial uses. Thus in these States we have dual systems of law governing waters which are antagonistic in principle, and, consequently, are continually clashing. These States, counting the Territory of Alaska, are eleven in number, and are Alaska, California, Kansas, Montana, Nebraska, North Dakota, Oklahoma, Oregon, South Dakota, Texas, and Washington. These latter States followed largely the rule first laid down by California in its attempt to reconcile a rule governing waters, the very foundation principle of which is, that the water must continue to flow in its natural channel as it was wont to flow by Nature, with a rule which requires that in order to secure a right the water must be diverted from its channel and applied to some beneficial use or purpose. Those States which have totally rejected the common law theories as to the acquisition of water rights and the use of the water and rely wholly upon the doctrine of appropriation, are seven in number and are Arizona, Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming.⁷ Hence it follows that there are two distinct systems or rules of law that govern the use of the waters flowing in the natural streams and lakes of the arid and semi-arid West—right to the use of the water by an appropriation of the same, and right to its use by virtue of an ownership of the soil adjoining which the stream runs. Of these two systems one has its foundation in the equal rights of *all* the riparian owners upon the same stream to the flow of the current in its natural or accustomed channel without material diminution in quantity or alteration in quality, regardless of any priority; and the other, which is almost the converse of the first, has for its basis a right, by virtue of priority, and without any ownership

⁶ For abrogation of common law by these States, see laws of respective States named.

See, also, Arid Region Doctrine, Secs. 585-594.

⁷ For Constitutional provisions declaring the use of waters to be a public use, see Secs. 378-385.

See, also, Arid Region Doctrine of Appropriation, Secs. 585-594.

of the soil being necessary, to appropriate and divert the water from its natural channel, without obligation upon the part of the appropriators to turn any of it back into the natural stream, and, if necessary for this purpose and within the extent of his appropriation, to use the whole of the water of the stream.

These two systems are antagonistic in their very foundation principles, and therefore antagonistic when it comes to the application of those principles. Had the Government of the United States taken as much pains in disposing of the waters of the public domain in as uniform and systematic a manner as it did of the public lands in the arid region, over which those waters ran, and the greater portion of which lands are absolutely worthless without the application of the water, the laws regarding water rights would not be in their present unsettled and inharmonious condition. But it is not the purpose of this work to debate what the law ought to be or what it might be, but what it is. And we will now proceed to discuss the general nature and extent of rights of riparian proprietors in and to the waters of the streams in those States in the arid West where the common law riparian rights are recognized and protected.

§ 508. **Western American doctrine—California rule.**—As we have seen in a previous section,¹ in some of the States and Territories of the Western portion of this country, riparian rights as defined by the common law have been entirely abolished; we will add that in others they have been modified to a great extent, and in still others they exist with but few modifications as they are interpreted by the Courts of England and the Eastern States.² We have also shown in previous sections,³ that although irrigation of the soil under certain circumstances was perhaps allowed under the strict application of the common law theories, it was so restricted by certain rules and restraints placed upon its practicable workings that those theories unmodified were found to be wholly inapplicable to irrigation as it is known and applied in the "Great Arid West." In that part of the country, in order to make the soil productive, there must be an application of the

¹ See Sec. 507.

² For the exact difference, see the

rules in the separate States and Territories, Part XIV.

³ See Secs. 500-506.

waters of the streams upon it. In order to apply it to the soil there must be an actual diversion from the natural stream; and, owing to the porous soil, the hot sun, and dry atmosphere, a certain loss or diminution in quantity must necessarily follow as a result of its application and use for irrigation. Hence, in all of the States and Territories in the arid West, even in those where the common law theories are most strongly applied to riparian rights, there has been a modification of these theories to this extent, that a riparian proprietor may take water from the stream and may make a reasonable use of it for purposes of irrigation. It is considered in the Pacific States that irrigation must be held in that climate "to be a proper mode of using water by a riparian proprietor," and the lawful extent of the use depends upon the circumstances of each particular case.⁴ In other words, the right of a riparian proprietor to irrigate his lands, to the extent that it is permitted under the Western American doctrine of riparian rights, is a great modification and extension of that doctrine as defined by the later English and Eastern American authorities. And, strange as it may seem, it fell to the lot of California, the very State where the doctrine of appropriation of the water for beneficial uses originated, to lead off in this modification of the common law rule of riparian rights. The most famous case upon the subject, although not the first, was that of *Lux v. Haggin*,⁵ in which Mr. Justice McKinstry, in rendering the opinion of the Court, quoted from Chancellor Kent the portion which has been so often referred to by the common law authorities as a high authority that water can not be employed for irrigation, and sometimes that it may, which is as follows: "Streams of water are intended for the use and comfort of man; and it would be unreasonable, and contrary to the general sense of mankind to debar any riparian proprietor from the application of water for domestic, agricultural, or manufacturing purposes, provided the use of the water be made under the limitation that he do no material injury to his neighbor below him, who has an equal right to the subsequent use of the same water."⁶

⁴ *Union. M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

⁵ 69 Cal. 255, 10 Pac. Rep. 674.

⁶ 3 Kent Com. 439. It will be no-

ticed that the above is not an exact quotation, but is a portion of two sentences. For the exact quotation, see Sec. 505.

The Justice, in construing this, said: "It seems to us that the foregoing, although a very distinct statement of the general proposition, *ought not to be taken literally*, unless the words 'material injury' be impressed with the signification the equivalent of a *substantial deprivation* of capacity in a lower proprietor to employ the water for useful purposes. The adjective is prefixed to injury, and the words seem to have reference to the enjoyment of the use by the inferior owner, not to his mere abstract right to the use as against others than riparian owners, and to intimate that he can not complain of a reasonable exercise of the use-by another who possesses the general right in common with himself. The passage as a whole may fairly be said to convey the idea that water may be used for agricultural or manufacturing purposes when such use does not materially deprive the lower proprietor of water either for drinking or agriculture."

The case of *Lux v. Haggin* is cited as the leading case upon the subject, not only in California, but by the Courts of other States, which follow the California rule in adhering to riparian rights; and the case holds to the effect that it is the law of the State of California that riparian proprietors are entitled to a reasonable use of the waters of a stream flowing by or through their lands for the purpose of irrigation; and that what is a reasonable use is a question of fact, and depends upon the circumstances of each particular case. The Federal Court also recognizes this use of the water in California. In the case of *California Pas. & Ac. Co. v. Enterprise Canal & L. Co.*,⁷ Wellborn, J., said: "The riparian doctrine, with irrigation as one of its uses, is the settled law of California."⁸

§ 509. **Western American doctrine—Enlargement of the common law.**—In order for a riparian proprietor to have the right to divert the water from a stream which runs through or by his land by virtue of his riparian ownership, and to the extent that it is permitted under the California rule, there is but one conclusion which can be reached, and that is that the common law in this

⁷ 124 Fed. Rep. 741.

⁸ Citing *Lux v. Haggin*, 69 Cal. 255,
4 Pac. Rep. 919, 10 Pac. Rep. 674;
Hargrove v. Cook, 108 Cal. 72, 41 Pac.

Rep. 18, 30 L. R. A. 390; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577,
38 L. R. A. 181.

respect has been greatly enlarged and extended to fit the conditions of the country.¹ In fact, that this is so has been generally recognized by the California and other Courts adhering to the rule. For instance, if a tract of patented land is in a State where the English common law doctrine of riparian ownership is enforced to the full, strict construction of the same, the owner of the land, if it is situated on a natural water course, would have the right to have the water of the stream flow down to his land without any material diminution in quantity, and could have the upper riparian proprietor enjoined from diverting the water in any way or for any purpose which would materially diminish its flow.² But, as was held in a recent California case,³ such right would not accrue to the riparian owner of land in an arid region of a Western State, where irrigation is necessary to successful agriculture, and where the original rule as to riparian ownership "*has been modified*" so as to allow a riparian proprietor to divert a reasonable amount of the water of a stream and use it to irrigate his riparian land, although a material part of the water would be absorbed and prevented from flowing down to the lower proprietor. It was also held in an earlier California case that the doctrine of riparian ownership has "*by judicial decision been modified, or rather, enlarged,*" so as to include the reasonable use of natural water for irrigating riparian land, although such use may appreciably diminish the flow to the lower riparian proprietor.⁴

1 For the common-law rule, as enforced in England and the eastern portion of the United States, see Secs. 500-506.

2 See Remedies, Injunctions by Riparian Proprietors, Part XIII.

For rule of riparian rights as construed in England and the Eastern States, see Secs. 500-506.

3 *Los Angeles v. Los Angeles Farming & M. Co.*, 152 Cal. 645, 93 Pac. Rep. 869.

4 *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325.

See, also, *Wiggins v. Muscupiabe Land & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Bathgate v. Irvine*, 126 Cal.

135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; *Los Angeles v. Los Angeles etc. Co.*, 152 Cal. 645, 93 Pac. Rep. 869, 1135; *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823; *Burr v. Maclay Rancho Co.*, 154 Cal. 428, 98 Pac. Rep. 260; *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634; *Mentone etc. Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S. 382, 17 Am. & Eng. Ann. Cas. 1222.

The reason for this modification or extension of the common law in this respect is, as held in a recent California case, if the rule of the common law is unfitted to conditions existing in a State, so that its application will work hardship and wrong rather than betterment and good, the Supreme Courts will refuse to follow it, but will adopt some more equitable rule.⁵ And in the famous case of *Katz v. Walkinshaw*,⁶ Mr. Justice Shaw, in rendering the opinion of the Supreme Court upon the motion for rehearing, held that the true doctrine upon the subject is that the common law by its own principles adapts itself to varying conditions, and modifies its own rules so as to serve the ends of justice under different circumstances. And, in stating the reason for the modification of the rule, held that whenever it is found that, owing to the physical features and character of the State where the common law is to be applied, and the peculiarities of its climate, soil, and productions, the application of a given common law rule tends constantly to cause injustice and wrong, rather than the administration of justice and right, then the fundamental principles of right and justice, on which that law is founded and which its administration is intended to promote, require that a different rule should be adopted.⁷ Again, in a very recent case in Oregon⁸ Mr. Justice King, in commenting upon the decision in the *Kansas-Colorado* case,⁹ held that there was a strong and commendable tendency upon the part of the Supreme Court of the United States to recognize that the rigid rules of the common law, as interpreted and sought to be applied by those insisting upon the "undiminished flow" theory, are inapplicable to the many new and intricate questions necessarily arising under our form of government throughout the arid and semi-arid sections.¹⁰ And so the common law of riparian rights has been modified and extended

⁵ *San Joaquin etc. Co. v. Fresno etc. Co.*, 158 Cal. 626, 112 Pac. Rep. 182.

For the abrogation of riparian rights, see Secs. 588-594.

For the States abrogating riparian rights, see Secs. 507, 621.

⁶ 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35.

⁷ As to the common law inapplicable to the arid West, see Secs. 588-594.

⁸ *Hough v. Porter*, 51 Ore. 318, 372, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 1099, 102 Pac. Rep. 728.

⁹ 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

¹⁰ But see *Sturr v. Beck*, 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350.

so that the use can be made of the water of the natural streams, by virtue of riparian ownership, for the purpose of irrigating land, in those jurisdictions following the California rule in this respect, and that, too, where a considerable amount of the water of the stream is consumed. The modified rule does not limit the water which can be used for this purpose to an "inappreciable" amount, as was held to be the rule under a strict construction of the common law right.¹¹

Some attempt has been made, by the Courts and others, to reconcile the irrigation of land as a riparian right, to the extent that it is exercised in California, upon the theory, as a Kansas Court puts it, that "The authorities are unanimous to the effect that the use of water for irrigation is one of the common law rights of a riparian proprietor"; and hence, already having that right, there has been no modification of the rule in the Western States, where the common law is adhered to.¹² The Kansas Court is incorrect in the statement that the authorities are unanimous upon the subject, as there are many powerful English and American authorities to the effect, that under a strict construction of the common law, water can not be diverted at all from a natural stream by a riparian proprietor for the irrigation of his lands, upon the theory that it would be an infringement on the rights of the other riparian owners.¹³ To be sure, other cases hold that the right may be allowed, but the question of "reasonable use" of the water is held to an insignificant amount, as compared with the amount that is allowed under the Western American doctrine under discussion. It must be to the extent only of "an inappreciable amount," or "provided no injury" is done to any of the other

¹¹ Embrey v. Owen, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633.

See, also, Swinton Waterworks Co. v. Proprietors etc. Nav. Co., L. R. 7 H. L. 697, 45 L. J. Ch. N. S. 638, 35 L. T. N. S. 513, 24 Week. Rep. 282; Sampson v. Hoddinott, 1 C. B. N. S. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 87 E. C. L. 590, 5 Week. Rep. 230.

See for later Eastern American doctrine, Sec. 505.

¹² Clark v. Allaman, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

See, also, upon this subject, Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; Benton v. Johncox, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; Jones v. Conn, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

¹³ See Secs. 501-506, and cases cited.

proprietors.¹⁴ A careful study of the common law rules upon the subject will prove to the most obtuse mind that there has been a gradual modification and extension of the common law rules of riparian rights, from the earliest English and Eastern American cases down to the doctrine of the Western American States. It is not our purport here to enter into an academic discussion as to *how* the Western theory was adopted, whether it was through the flexibility of the common law to adapt itself to different conditions in different States, or, whether it was by a direct modification by the Courts in holding that the strict construction of the common law rule was inapplicable to the Western portion of the country, and hence to that extent it must be amended. However, we will say that in the ten Western States in this country, named in a preceding section,¹⁵ a riparian proprietor has the right by virtue of his ownership of lands through which or by the side of which a natural stream flows to divert the water from the stream and use the same for the irrigation of his riparian lands, to a reasonable extent.¹⁶ As was said by the Supreme Court of

¹⁴ See, also, Secs. 501, 502, and cases cited.

¹⁵ See Sec. 507.

¹⁶ See Western cases cited above.

See, also, *Union Mill & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 73; *Ellis v. Tone*, 58 Cal. 289; *Anaheim W. Co. v. Semi-Tropic W. Co.*, 64 Cal. 185, 30 Pac. 623; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Swift v. Goodrich*, 70 Cal. 103, 11 Pac. 561; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879, *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Healy v. Woodruff*, 97 Cal. 464, 32 Pac. Rep. 528; *Charnock v. Higuerra*, 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191; *Ferre v. Knipe*, 28 Cal. 340, 87

Am. Dec. 128; *Peregoy v. McKissick*, 79 Cal. 572, 21 Pac. Rep. 967; *Sharp v. Hoffman*, 79 Cal. 404, 21 Pac. Rep. 846; *Coffman v. Robbins*, 8 Ore. 278; *Stenger v. Tharp*, 17 S. D. 13, 94 N. W. Rep. 402; *Mud Creek Irr. Co. v. Vivian*, 74 Tex. 170, 11 S. W. Rep. 1078; *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *Barrett v. Metcalf*, 12 Tex. Civ. App. 247, 33 S. W. Rep. 758; *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Nielson v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 123 Am. St. Rep. 910; *Nesalhaus v. Walker*, 45 Wash. 621, 88 Pac. Rep. 1032; *Smith v. Corbit*, 116 Cal. 587, 48 Pac. 725; *Shotwell v. Dodge*, 9 Wash. 576, 8 Wash. 337, 36 Pac. Rep. 254; *Brosnan v. Harris*, 39 Ore. 148, 65 Pac. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; *Lone Tree etc. Co. v. Cyclone etc. Co.*, 15 S. D. 519, 91 N.

California in one of the most recent decisions upon the proposition, in a case where it was contended by the plaintiffs that a riparian owner had the common law right to the full flow of the stream through his land: "The rule is evidently not suited to the conditions of a dry climate such as we have in this State. It is accordingly well settled here that each riparian owner has a right to a reasonable use of the water on his riparian land for the irrigation thereof, and that the so-called common law right of each to have the stream flow by his land without diminution is subject to the common right of all to a reasonable share of the water.¹⁷

We will now take up the subject as to what extent water may be diverted for irrigation by riparian proprietors as one of their riparian rights under the Western American doctrine and as between each other, leaving the question of the right of appropriations subsequent to vested riparian rights on the same stream to another portion of this work.¹⁸

§ 510. Western American doctrine—Extent to which water may be diverted.—As we have seen in the previous sections, irrigation, especially in the arid and semi-arid States of this country, is held to be a proper mode of using the water of the natural streams by a riparian proprietor.¹ The question now is, To what extent

W. Rep. 352; *Id.*, 26 S. D. 307, 128 N. W. Rep. 596.

See, also, the cases cited upon the question of reasonable use by riparian proprietors for irrigation.

¹⁷ *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S. 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823, citing *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Harris v. Harrison*, 93 Cal. 681, 29 Pac. Rep. 325; *Wiggins v. Muscippiabe etc. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Smith v. Corbit*, 116 Cal. 587, 48 Pac. Rep. 725; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Hargrave v. Cook*, 108 Cal. 72, 41 Pac. Rep. 18, 30 L. R. A. 390; *Van Bibber v. Hilton*,

84 Cal. 585, 24 Pac. Rep. 308; *Gould v. Stafford*, 77 Cal. 67, 18 Pac. Rep. 897; *Heilbron v. 76 Land & Water Co.*, 80 Cal. 189, 22 Pac. Rep. 62; *Barneich v. Mercy*, 136 Cal. 205, 68 Pac. Rep. 589; *Rose v. Mesmer*, 142 Cal. 329, 75 Pac. Rep. 905.

See, also, for the right of appropriation as against prior riparian rights, Secs. 815-823.

¹⁸ For mixed rights on the same stream, and appropriations subsequent to vested riparian rights, see Sec. 823.

¹ *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

See authorities cited in the previous sections.

in the common law States may water be diverted for this purpose? An examination of the authorities upon the subject will disclose the fact that they differ materially in the different States. And in some of the States there are different rules applicable to different localities, varying according to the physical conditions. The State of Texas is divided into two divisions, arid and not arid, or humid.² In the arid portion water for irrigation is held to supply a natural want,³ and the Court holds that in the arid districts the waters of all natural streams may be diverted and used by an upper riparian proprietor for the irrigation of his riparian lands, to the exclusion of the use thereof by a lower riparian owner for such purposes.⁴ In other portions of the State, however, the Court holds that the use of the water of a stream for irrigation will not justify the upper owner in exhausting the water to the injury of proprietors lower down on the stream.⁵ Although the State of Texas has the authority to adopt what rule governing and regulating the use of waters within its boundaries as it sees fit,⁶ as long as there is no interference with navigation,⁷ the above rule adopted for the arid portion of the State is not in accord with the rule adopted by the other Western common law States upon the subject. The general rule of the Western American doctrine is to the effect that a riparian proprietor is not entitled to divert and use all of the water of a stream without regard

² For irrigation in Texas, see Part XIV.

³ For natural and artificial wants, see Secs. 486, 487, 500, 501.

⁴ *Barrett v. Metcalf*, 12 Tex. Civ. App. 247, 33 S. W. Rep. 785; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631.

See, also, *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540, where the Court held that the maxim, "The water runs, and let it run," or "Every one has a right to have the advantage of a flow of water in his land without diminution or alteration," as applied by England and the Eastern States, where water is useful only in its flow, had no application to a State where water was useful for irrigation, and

56—Vol. I—Kin. on Irr.

instead thereof the Court substituted the rule, "Water irrigates, and let it irrigate."

See, also, *Mud Creek Irr. Co. v. Vivian*, 74 Tex. 170, 11 S. W. Rep. 1078, where the Court also held that the old common law rule did not apply.

The rights of an upper riparian proprietor to the use of the water of the stream for irrigation purposes are superior to those of a lower proprietor. *Cornick v. Arthur*, 31 Tex. Civ. App. 579, 73 S. W. Rep. 410.

⁵ *Fleming v. Davis*, 37 Tex. 173.

⁶ For right of State over its waters, see Sec. 593.

⁷ For right of navigation, see Secs. 341-357.

to the wants and necessities of other riparian proprietors, although the amount so diverted and used was no more than is necessary for the irrigation of his riparian lands, unless the proprietor has acquired a title to the use of the excess of the water over and above the amount to which he is entitled by virtue of his ownership of the land, by means of a grant, prescription, or by means of a prior appropriation for beneficial uses, under the Arid Region Doctrine.⁸ And in the latter case, of course, the rules applicable to that doctrine in the State where the appropriation is made will apply. In fact, there is but one state or condition where a riparian proprietor as such is permitted, under the Western American doctrine of riparian rights, to use all of the waters of a natural stream, and that is when they are necessary for domestic and household uses, and for the watering of a limited number of horses and cattle. In this case and for such necessities, where the stream is small, he may consume all of the water flowing naturally in the same.⁹ But outside of this right, and especially under the common law right to divert the water for irrigation, as was said in the case of *Lux v. Haggin*, the leading case upon the subject, "An entire diversion of a water course by an upper riparian proprietor for irrigation is never allowed."¹⁰ It is also held that no use of the

⁸ For Arid Region Doctrine of Appropriation, see Chap. 31, Secs. 585-594.

⁹ *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370; *Id.*, 81 Fed. Rep. 73, where the Court held that in the exercise of his common-law right each riparian proprietor may consume so much of the water as is necessary for household and domestic purposes and for watering his stock.

See, also, *Ferrea v. Knipe*, 28 Cal. 240, 87 Am. Dec. 128; *Hale v. McLea*, 53 Cal. 578; *Washburn on Easements and Servitudes*, 2d Ed., p. 240; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Ellis v. Tone*, 58 Cal. 289.

In the case of *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083, the Court practically classifies the use of water

for the irrigation of such garden produce as may be essential to the proper sustenance of a settler and his family among his natural wants.

¹⁰ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

See, also, the cases cited above; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571; *Pope v. Kinman*, 54 Cal. 3; *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634; *Stenger v. Tharp*, 17 S. D. 13, 94 N. W. Rep. 402.

water, however great, by a riparian owner can give him rights by adverse user against another riparian owner.¹¹ In other words, the use of water for irrigation, under the Western American doctrine of riparian rights, as is also the case under the English and Eastern doctrine, is proper so long as it is kept within the limit, that it must not unreasonably prevent the possibility of a correlative use by all the other proprietors upon the same stream. That is to say, the use must be reasonable with reference to the rights of all the other proprietors.

We will now discuss the proposition as to what is a reasonable use by riparian proprietors of the waters of a natural stream for the purpose of irrigation, as it is declared under the Western American doctrine.¹²

§ 511. Western American doctrine—Extension of the rule of "reasonable use."—As we have seen in the previous sections, in the Western common law States, in those portions where irrigation is necessary to the successful cultivation of the soil, the doctrine of riparian ownership has by judicial decision been modified, or rather, enlarged, so as to include the reasonable use of the water from natural streams for irrigating riparian land, even though such use may appreciably diminish the flow down to the lower riparian proprietors.¹ It is a well-known fact that in the Western portion of this country the majority of the streams are comparatively small; hence, if any considerable amount of water is diverted, it will diminish the flow down to the lower proprietors. And, as it usually takes a considerable amount of water to irri-

This rule may prevent the use of any water from some of the streams for irrigation purposes, if they are so small that all of the water is required for domestic purposes; or one owner can not take out water for irrigation and still leave a proportionate share for the other owners. *Baker v. Brown*, 55 Tex. 377.

¹¹ *Walker v. Lillingston*, 137 Cal. 401, 70 Pac. Rep. 282; *Crawford Co. v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Dunn v. Thomas*,

69 Neb. 683, 96 N. W. Rep. 142; *Mud Creek Irr. Co. v. Vivian*, 74 Tex. 170, 11 S. W. Rep. 1078.

See, also as to prescription as between riparian proprietors, Sec. 1040.

¹² See Secs. 511-517.

¹ See Secs. 500-506.

See, also, *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Wiggins v. Muscupiabe Land & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158.

gate a tract of land in a proper manner, and the most of the water used is consumed in the operation so that it does not reach the lower proprietors at all by way of the natural channel of the stream, in order for a riparian owner on a small stream to be permitted to irrigate his land as one of his riparian rights, the common law rule as to "reasonable use" for this purpose had to be enlarged and extended so as to meet the physical conditions of that portion of the country, in those Western States where the common law is adhered to. So the Courts had one of three propositions to decide upon: A strict construction of the common law rule in this respect; a modification of the rule, so as to permit a practical use of the water for irrigation; or the entire abrogation of the common law of riparian rights, and the adoption of the Arid Region Doctrine only in these States, which doctrine is based upon prior appropriation and diversion for beneficial uses. As was said in the case of *Meng v. Coffey*:² "If the existence of a rule better applicable to parts of the State were of itself sufficient ground for judicial overturning of the law, the question would arise, What principle are we to adopt?" And the Courts and legislatures in these ten States, having theretofore adopted the common law upon the subject of riparian rights, rather than the "overturning of the law" in this respect³ decided, as was their right, to extend the common law rule of "reasonable use," as it is recognized and enforced by the laws of England and the Eastern States, so that enough water might be diverted from the streams, as a riparian right, to be of some benefit to the owner in the irrigation of his lands, even if the owners below on the stream were technically injured, according to the strict construction of the common law rule, in their riparian rights, by the flow of the stream being considerably lessened when it reached their lands.⁴ As was said in the case of *Meng v. Coffey*, "Nor do we believe that the common law rule of equality among riparian owners, *administered liberally with respect to the circumstances of particular localities*, is necessarily prohibitive of irrigation anywhere. . . . It would be impolitic to give an arbitrary or hard and fast

² 67 Neb. 500, 93 N. W. Rep. 715,
60 L. R. A. 910, 108 Am. St. Rep. 697.

³ For the ten common-law States adhering to the common law, see Sec. 507.

⁴ See cases cited, *supra*.

For strict construction of common law rule, see Sec. 504.

meaning to the word 'reasonable' in this connection. The use of the water for irrigation always involves some loss, and we do not think it would be wise to declare every perceptible diminution of the waters of a stream to be unreasonable. The necessity of a liberal view of what constitutes a reasonable use of water for irrigation has been judicially recognized."⁵

It was also held in a leading case in Oregon⁶ that the strict rule of the common law, so often stated and reiterated in the books, that a riparian proprietor is entitled to have the entire flow of the stream come down to his premises, is subject to the *important limitation* that an upper riparian proprietor may make such use of the water as does not work any actual, material, and substantial damage to the common right which each proprietor has; and whether a use of the water for irrigation is of the character referred to, and therefore reasonable, depends upon the correlative rights of the other proprietors. And the Court further held that under this Western doctrine of the common law, that an owner was not a wrongdoer when he used the waters of a stream for the purpose of irrigation; nor does the fact that his land lies above the level thereof, so that it can not be irrigated by means of ditches wholly on his own lands, affect his right to the use of the water.⁷ This extension of the rule of "reasonable use" is also so applied in the case of the smaller streams, in cases where the water for the entire stream is needed for irrigation by any one proprietor; and in these cases it is held that the Court of Equity has the power to apportion or divide the use of the water for irrigation according to time, when each appropriator may use the entire flow of the stream for a certain number of hours or days, as the case may be, and then it passes to the other proprietors for their use in the same manner.⁸

From the holding of the Courts in these ten Western common-law States and the liberal construction given to the rule of "reasonable use" the conclusion is irresistible that in this portion of the country, as to the use of the water for irrigation, the rule has been very much enlarged and extended, so that instead of permitting an "inappreciable" amount to be used, as is the rule under

⁵ Citing the above cases.

⁶ *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

⁷ See, also, *Charnock v. Higuerra*,

111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195.

⁸ For the division of the use among riparian proprietors, see Part XIII.

See, also, Remedies, Part XIII.

the strict construction of the common law,⁹ an appreciable amount, or an amount which is of some practical use to the owner, is permitted. In the State of South Dakota it was recently held that where a water right is subsequent and inferior to another's riparian rights, the latter may use all the water required for domestic purposes and for proper irrigation of the land riparian to the stream before he permits any to flow down.¹⁰

§ 512. **Western American doctrine—Reasonable use of water for irrigation by riparian proprietors.**—In general, the term "reasonable use" of water for irrigation, as permitted in the Western States, which follow the common-law rule governing the use of water for irrigation, as a riparian right, is always relative.¹ This use does not depend upon the convenience of, or the profitable results to, any particular proprietor upon a stream; however, these questions may be considered with the other facts in any particular case. The question does depend upon the size, character, and situation of the stream, the fall of the water, its volume and velocity, the prospective rise and fall, the season of the year, the nature of the region, the character of the soil, the amount of water required to irrigate the land per acre, the number of the riparian proprietors, and the extent of the riparian land on the stream susceptible of irrigation, owned by each proprietor, the use to which the water may be put by all of the proprietors, the kind of crops to be irrigated, and their need of water, the means adopted for returning the water to the natural channel, and a variety of other circumstances and conditions surrounding each particular case.² So,

⁹ *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633.

See, also, *Later Eastern American Doctrine*, Sec. 506.

¹⁰ *Driskill v. Rebbe*, 22 S. D. 242, 117 N. W. Rep. 135.

¹ For the ten States which adhere to the common law, see Secs. 507, 621.

It must be noted that in all of these States the laws also allow the appropriation of water under the Arid Region Doctrine. See Secs. 507, 621.

² *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Jones v. Adams*,

19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325, in which the Court said: "In such a case, the length of the stream, the volume of the water in it, the extent of each ownership along the banks, the character of the soil owned by each contestant, the area sought to be irrigated by each—all these and many other considerations enter into the solution of the problem; but one principle is surely established, namely, that no proprietor can absorb all the water of the stream so as to allow none to flow down to his neigh-

where a riparian proprietor claimed the right to the use of water upon lands which were valueless for irrigation purposes, as against the actual use of the water for beneficial purposes, the Court said: "A riparian proprietor's claim to make such a use of the waters of a stream is of course without legal foundation."³

A recent Washington case held that Section 6327 of the Remington and Ballinger Code which provides that any person owning lands, who is not the riparian proprietor or who being such has not sufficient frontage to attain a sufficient flow of water to irrigate his lands, shall be entitled to a right of way over lands lying between his lands and the stream or above or below it; but it was further held that the section "does not give a right to take water already appropriated, or to take away the rights of a superior riparian owner."⁴

Under the rules of the common law the term "reasonable use" must be liberally construed, with reference to the rights of all of the riparian proprietors on a stream, and it is declared by all of the authorities upon this subject that it is impossible to lay down any precise rule which will be applicable to all cases.⁵ But there are some features of the subject upon which all the authorities agree as questions of law. One of these is that in no case can a riparian proprietor for the purpose of irrigation, as against the other proprietors either above or below him on the stream, use or successfully claim all of the water of a stream, in the absence of a prior legal appropriation. That can be done, if at all, only where the whole of the stream is absolutely necessary for strictly domestic

bor." *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90, where the Court said: "The question of reasonable use is not to be determined solely by the wants of the party using the water—whether the amount is sufficient for his own lawful purposes—but reference must also be had to the rights and needs of other proprietors upon the stream. 'The necessities of one man's business can not be made the standard of another man's rights in a thing which belongs equally to both.' "

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442; 77 Am. St. Rep. 158.

3 Montecito etc. Co. v. Santa Barbara, 151 Cal. 371, 90 Pac. Rep. 935. See, also, *Id.*, 144 Cal. 578, 77 Pac. Rep. 1113.

4 Miller v. Baker, — Wash. —, 122 Pac. Rep. 604.

5 See cases cited supra.

See, also, *Southern Cal. Inv. Co. v. Wilshire*, 144 Cal. 68, 77 Pac. Rep. 767.

purposes and to furnish drink for man and beast.⁶ Again, an upper owner has no superior right to the use of the water by virtue of his position on the stream, but can divert only such an amount of the water as will represent his proportion of it, when all the circumstances in the case, including the number of other owners and their rights in the water, are taken into consideration.⁷ So, again, the authorities agree that the water must not be used by a riparian proprietor for the irrigation of nonriparian land. We will more fully discuss this question in subsequent sections.⁸ An-

⁶ In an action by a lower riparian owner to restrain the diversion by an upper owner of the waters of a stream, a decree ordering that the whole of the water be allowed to flow unrestricted to plaintiff's lands in the natural flow, except a given number of inches, is erroneous, since defendant would thereby be deprived of the reasonable use of any part of the water for irrigation or other necessary purposes as riparian proprietor. *Van Bibber v. Hilton*, 84 Cal. 585, 24 Pac. Rep. 308; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; and also *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Nielson v. Spöner*, 46 Wash. 14, 89 Pac. Rep. 155; *Nesalhou v. Walker*, 45 Wash. 621, 88 Pac. Rep. 1032; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *Smith v. Corbit*, 116 Cal. 587, 48 Pac. Rep. 725; *Shotwell v. Dodge*, 8 Wash. 337, 36 Pac. Rep. 254; *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *Brosnan v. Harris*, 39 Ore. 148, 65 Pac. Rep. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; *Ellis v. Tone*, 58 Cal. 289; *Lone Tree etc. Co. v. Cyclone etc. Co.*, 15 S. D. 519, 91 N. W. Rep. 352; *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540; *Weiss v. Oregon Iron & S. Co.*,

13 Ore. 496, 11 Pac. Rep. 255; *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370; *Id.*, 81 Fed. Rep. 73; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Corfman v. Robbins*, 8 Ore. 279; *Hough v. Porter*, 51 Ore. 318, 95 Pac. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728; *Rogers v. Overacker*, 4 Cal. App. 333, 87 Pac. Rep. 1107; *Arroyo D. & W. Co. v. Baldwin*, 155 Cal. 280, 100 Pac. Rep. 874; *Mentone Irr. Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 122.

The use of water for irrigation as a riparian right is limited by the condition that it must be so used as not to materially injure other riparian owners in their proportional use of the water from the same stream for the irrigation of their riparian lands. *Caviness v. La Grande Irr. Co.*, — Ore. —, 119 Pac. Rep. 731.

⁷ *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Learned v. Tangeman*, 65 Cal. 334, 4 Pac. Rep. 191.

⁸ See Secs. 457-465.

See, also, *Anaheim Water Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1062.

other rule is that the water must not be used by an upper proprietor in a wasteful manner, so as thereby to prevent a reasonable use of the water by the lower owners.⁹ And, again, the surplus water must be returned to the natural stream so that it can be used by the owners below.¹⁰

It follows as a conclusion from the above that a riparian proprietor in the Western States named may use the water of the natural streams for the irrigation of his riparian land, subject to the above limitations imposed by law. In all cases the use must be reasonable under all the circumstances of the case. What is a "reasonable use" under the liberal construction of the term by the courts of the Western States is a question of fact for the determination of the jury, within the limitations above set forth, under proper instructions of the Court. In the use by one proprietor no actual or substantial rights of the others must be infringed upon, or an action will lie, against the owner wrongfully using the water, at law for damages, or in equity for an injunction. It is also plain why, in the arid West (whose agricultural resources depend almost entirely upon the extent of irrigation) a strict construction of the common law was found to be a very inadequate and impracticable guide governing the right to the use of the waters of the natural streams; and why in the States formed from the country lying west of the one hundredth meridian the common law should have been modified in all, especially as to the use of the water for irrigation, and entirely abolished in some.¹¹

§ 513. Correlative rights of the several proprietors.—Where the rights of riparian proprietors are referred to by the authorities as being "equal," that is not always what is meant in the strict sense of the word. Especially is this true under the Western American doctrine where the use of water for irrigation is allowed the owners on the banks of streams as one of their riparian rights. The terms "correlative rights," or "relative rights" are more ap-

Boehmer v. Big Rock etc. Co., 117 Cal. 19, 48 Pac. Rep. 908.

⁹ For wasting water, see Secs. 911-916.

See, also, Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; Union M.

& M. Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; Shotwell v. Dodge, 8 Wash. 337, 36 Pac. Rep. 254.

¹⁰ See Secs. 496, 522.

¹¹ For the rules adopted in the respective States, see Secs. 507, 621.

propriate in this connection. No one would contend for a moment that it would be equitable to allow an owner who had but a few rods fronting on the stream, or a very few acres of land susceptible of irrigation, to have the same right to the use of the waters of the stream as an owner who had a mile or more fronting on the stream with, say, 1,000 acres susceptible of irrigation, especially where there was water in the stream enough for both, if divided according to their relative needs. So, again, a person who had 1000 acres fronting on the stream, and only ten acres susceptible of irrigation, should not be allowed the same right as one who had but 100 acres, all of which might be irrigated. Hence it is the rule in these Western States that a riparian owner's right to irrigate exists as an incident to the soil of the full amount of irrigable riparian land which he owns, as compared to the same character of land owned by all of the other riparian proprietors on the same stream. In other words, his right is measured by his necessities, with due regard to the correlative rights and necessities of the other owners on the same stream. Of course in cases where there are a large number of riparian proprietors whose rights are involved, there is great difficulty in determining what is a reasonable use by all. Many circumstances must be taken into consideration, and the result must depend upon the peculiar circumstances appearing in each particular case.¹ As an extreme illustration of this principle, in one California case it was held that where none of the land of a riparian owner was irrigable, "a riparian proprietor's claim to make such a use of the waters of a stream is of course without legal foundation."²

Upon this subject it was said by Judge Hawley, Federal Judge for Nevada: "Under the rules of the common law riparian proprietors would have all the right to a reasonable use of the waters of a stream running through their respective lands for the purpose

¹ Harris v. Harrison, 93 Cal. 676, 29 Pac. Rep. 325; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

See, also, as to determination of reasonable use, Secs. 490, 511.

² Montecito etc. Co. v. Santa Barbara, 151 Cal. 377, 90 Pac. Rep. 935; see, also, *Id.*, 144 Cal. 578, 77 Pac. Rep. 1113.

See, also, Southern California v. Wilshire, 144 Cal. 68, 77 Pac. Rep. 767; Harris v. Harrison, 93 Cal. 676, 29 Pac. Rep. 325; Nesalhou v. Walker, 45 Wash. 621, 88 Pac. Rep. 1032; Gutierrez v. Wege, 145 Cal. 730, 79 Pac. Rep. 449; *Id.*, 151 Cal. 587, 91 Pac. Rep. 395; Anaheim etc. Co. v. Fuller, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1662.

of irrigation. It is declared in all of the authorities upon this subject that it is impossible to lay down any precise rule which will be applicable in all cases. The question may be determined in each case with reference to the size of the stream, the velocity of the water, the character of the soil, the number of proprietors, the amount of water needed to irrigate the lands per acre, and a variety of other circumstances and conditions surrounding each particular case; the true test being whether the use is of such a character as to materially affect the equally beneficial use of the waters of the stream by the other proprietors."³

A riparian owner has a right to make a reasonable use of the waters of a stream flowing over or along his lands for the purpose of irrigation. This right should be measured primarily by the amount of water in the stream available for such purpose, the number of persons who use it, the size, situation, and character of the stream, and nature of the region.⁴ However, the right of each proprietor having been once ascertained, an agreement may be made between all the owners that each take a portion of the water to irrigate their lands for all or a portion of the time; or, if the stream is small, that the apportionment may be by periods of time instead of by quantity or volume of the water.⁵ Again, if an

³ *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 81 Fed. Rep. 73, quoting from the earlier opinion by the same Judge, while Chief Justice of Nevada, of *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

See, also, *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Vansickle v. Haines*, 7 Nev. 249, 15 Morr. Min. Rep. 201; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 610, 108 Am. St. Rep. 697; *Vernon Irr. Co. v. Los Angeles*, 106 Cal. 237, 39 Pac. Rep. 762; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Coffman v. Robbins*, 8 Ore. 278,

8 Morr. Min. Rep. 131; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S., 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823.

⁴ *McCook Irrigation & Water Power Co. v. Crews*, 70 Neb. 109, 96 N. W. Rep. 996; *Id.*, 70 Neb. 115, 102 N. W. Rep. 249.

See, also, *Lone Tree Ditch Co. v. Cyclone Ditch Co.*, 26 S. D. 307, 128 N. W. Rep. 596, modifying *Id.*, 15 S. D. 519, 91 N. W. Rep. 352; *Redwater Land & Cattle Co. v. Reed*, 26 S. D. 466, 128 N. W. Rep. 702.

⁵ For agreements as to apportioning water between riparian owners, see Sec. 535.

For the appropriation of water by periods of time, see Sec. 586.

agreement can not be reached between the various riparian claimants to the water, a court of equity has the authority to make the apportionment, in a proper action, and award to each owner either a definite share of the flow for continual use,⁶ or all of the stream for a portion of the time.⁷ These subjects will be more thoroughly discussed in other portions of this work to which references have been made.⁸

§ 514. What lands may be irrigated by a riparian proprietor—Must be riparian and lie within the watershed of the stream.—As we have seen in a previous portion of this work, lands, in order to be riparian, must border or touch upon the water of a stream or other body of water. In other words, the riparian owner must own the bank in order for his lands to be riparian.¹ This principle is also adhered to in the Western States which follow the common law and allow a liberal use of the waters of the natural streams for irrigation.² The question now arises, as to how far back from the stream the lands may lie, so that they may be irrigated as a riparian right, under the Western American construction of the common law. Upon this subject the States in question have adopted practically the same rule. For the present we will disregard the question of title,³ and discuss the question from the standpoint of the water-

⁶ For actions to apportion the water between riparian owners, see Remedies, Chap. 78.

See, also, *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Lone Tree Ditch Co. v. Cyclone Ditch Co.*, 15 S. D. 519, 91 N. W. Rep. 352; *Id.*, 26 S. D. 307, 128 N. W. Rep. 596; *Verdugo W. Co. v. Verdugo*, 152 Cal. 655, 93 Pac. Rep. 1021, where the Court held that where riparian land was partitioned, and water apportioned to the several tracts, it did not change the character of the rights of the respective parties; but the right assigned to each was a riparian right, and that one party will not be permitted to decrease the underground waters essential to the existence and preservation of the surface water, to

the injury of the other riparian proprietors.

For riparian right in subterranean waters, see Secs. 1148, 1211.

⁷ *Wiggins v. Muscupiabe Land & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Hough v. Porter*, 51 Cal. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728.

⁸ See references *supra*.

¹ See Secs. 451, 452, 458.

As to what are riparian lands, see, also, Secs. 457-466, and cases cited.

² For the ten Western States which adhere to the common law, see Sec. 507.

³ As to title as affecting the riparian right to irrigate lands, see Sec. 518.

shed. The great weight of authority in these States holds that land in order to be riparian, and hence entitled to be irrigated as a riparian right, should lie within the drainage basin or watershed of the stream to which the riparian rights are claimed. This is so for the reason that, as soon as the land passes over the ridge or "divide" separating its drainage basin from another, it becomes tributary to another stream; and, therefore, if it touches this stream, it is riparian to it; if it touches no stream, it is not riparian land. So, if a divide cuts in two a tract of land held under one ownership, that portion only which lies within the drainage basin of the stream may rightfully be irrigated.⁴

If we are to adhere to the principles of the common law, this rule is undoubtedly the correct one. We have seen in previous sections,⁵ that the use of the water for irrigation must be a reasonable one. We will also see in a subsequent section⁶ that after its use all water not actually consumed must be returned to the natural stream, for a like use by the other riparian proprietors below. Now to run the water by means of tunnels, or otherwise, under the divide to another watershed, so that both the percolation and the surplus could not be returned to the stream from which it was taken, but

⁴ In the case of the Anaheim Union Water Co. v. Fuller, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062, the Court held that land which is not within the watershed of a river was not riparian thereto, and is not entitled, as riparian land, to be irrigated from the water of the river, although it may be a part of an entire tract which does extend to the river. The principal reasons for the rule are, that where the water is used on such land, it will, after such use, return to the stream, so far as it is not consumed; and that, as the rainfall on such land feeds the stream, the land is in consequence entitled to the use of its waters. Where two streams unite, the Court held that each is to be considered a separate stream, and that land lying within the watershed of one stream is not to be considered as riparian to the other stream.

See, also, Chauvet v. Hill, 93 Cal. 407, 28 Pac. Rep. 1066; Montecito Val. W. Co. v. Santa Barbara, 144 Cal. 578, 77 Pac. Rep. 1113; *Id.*, 151 Cal. 377, 90 Pac. Rep. 935; Bathgate v. Irvine, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; Southern Cal. Irr. Co. v. Wilshire, 144 Cal. 68, 77 Pac. Rep. 767; Wiggins v. Muscupiabe W. Co., 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; Watkins Land Co. v. Clements, 98 Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 673; Pomona Land & W. Co. v. San Antonio W. Co., 152 Cal. 618, 93 Pac. Rep. 881; Clark v. Allaman, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

⁵ See Secs. 510, 511.

⁶ See Sec. 522.

would flow to another stream, would be a most unreasonable use of the water, when taking into consideration the rights of the other proprietors on the first stream, and would also give to the proprietors on the second stream water to which they were not entitled. However, the Oregon Court, in the case of *Jones v. Conn*,⁷ intimated that the irrigation of riparian land can not be prevented by the fact that it is divided from the stream, which will prevent the return of the water to the stream, when the amount of water taken and used by the defendant was not sufficient to materially injure the plaintiffs, or to interfere in any substantial way with their rights as riparian proprietors. It was also held in a Texas case,⁸ while recognizing the rule as stated above, that circumstances might exist that would authorize the Court to extend the rule; for example, if the drainage area be small and the supply of water abundant, so that other riparian proprietors would not be deprived of an ample supply, it might not be an unreasonable use to carry the water beyond the watershed.⁹ These cases thus made the question of reasonable use of the water, and the needs of the other riparian proprietors the basis for their suggestions. However, in deciding the cases both held against the extension of the rule. In the Oregon case it was conceded that under the claim alone of riparian rights the owner of land can not, to the injury of another riparian proprietor, take water beyond the watershed; and where the defendant claimed the absolute right to sufficient water to irrigate his land, regardless of the effect it might have upon the other proprietors, the Court held that the plaintiffs were entitled to such a decree as would prevent its use from ripening into an adverse title, and therefore the Supreme Court affirmed the decree of the trial Court perpetually enjoining and restraining him (the defendant) from diverting any of the waters of the river to irrigate such land, "to the actual and perceptible injury of the plaintiffs as riparian proprietors upon their riparian lands." In the Texas case the Court also held against the extension of the rule, and limited the lands which might be irrigated from a stream to those which lie within the watershed.

In regard to lands upon tributaries of streams, or those lying

⁷ 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634. Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 673.

⁹ Citing *Jones v. Conn*, *supra*.

⁸ *Watkins Land Co. v. Clements*, 98

within the major watershed of a stream system, and the minor watershed of any individual tributary, the rule is that they must be considered separately, and water taken from a tributary must be used within the watershed of that tributary.¹⁰

§ 515. **What lands may be irrigated—**The question of title to different adjoining tracts.—As we have seen, land, in order to entitle it to be irrigated from a natural stream as a riparian right, must border or touch on the stream.¹ All land is riparian, as far as title is concerned, which abuts upon the stream, which at the time of the use is in one contiguous tract and held in one ownership, and from which the stream may be reached without passing over other lands the title to which is in another.² With the furthestmost boundary of a single tract of the land from the stream held in a single ownership, the riparian character of the land ceases, for the reason that there is no direct access to the stream from other lands beyond this boundary. We now come to the question as to whether a person who owns several tracts of land, only some of which touch upon the stream and are strictly riparian, can extend his riparian right to irrigate them all, where after the purchase they formed one contiguous tract. Upon this subject the rule in the different States is not the same. One rule is that, where lands are acquired by an entryman or purchaser by different entries or purchases, the boundary of the riparian land is restricted to the land bordering on the stream which was acquired by one transaction, and beyond which the riparian right of irrigation can not extend. This is the rule laid down by the California Courts, which hold that the riparian right of irrigation should be limited to the smallest tract touching the stream in the history of the title while in the hands of the owner at the time of his claim of the right.³ Upon this point

10 *Anaheim Union W. Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062.

As to the irrigation of lands beyond a "divide" under the Western doctrine of appropriation, see Sec. 866.

¹ See Secs. 451, 452, 456.

² See *Right of Access*, Secs. 336, 337, 344, 540.

For what are riparian lands, see Secs. 454, 458, and cases cited.

³ *Boehmer v. Big Rock Irr. Dist.*, 117 Cal. 19, 48 Pac. Rep. 908; *Anaheim Water Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1062.

There is nothing in the case of *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 20 Am. St. Rep. 217, contrary to the rule stated in the text. It is true that the land in question was 1280 acres. The case does not

the Nebraska Court also holds with California that the riparian land stops at the outermost edge of a single original Government entry, and that the riparian right to irrigate this land can not be extended by purchase or subsequent entries to lands contiguous to the riparian land but not themselves touching on the stream.⁴ Upon the other hand, the Courts of Oregon and Kansas hold that, in determining the quantity of land lying along a stream which a single proprietor may irrigate, the question of equality of right should control, irrespective of the matter of governmental subdivisions of the land, or the acquisition of lands through different sources of title. And, that where the stream is sufficient, all land held under one ownership, regardless of the area or the different subdivisions, may be irrigated as a riparian right, where it does not work any material and substantial damage to the common rights of the other proprietors.⁵

Claiming the right to the use of the water as riparian owners, the rule as laid down in the latest cases seems to be correct in principle, as the use of water under that law must be reasonable in all respects, as between riparian owners. It is not a too liberal construction of the common law as to what are riparian lands. The common law recognizes no Government surveys, but holds that all lands touching upon a stream held in a common ownership and within the same watershed are riparian. And, if riparian, they may be irrigated, if such a use is permitted as a riparian right in the jurisdiction where the case arises. This liberality also is the correct rule when there is an ample supply of water in the stream

show how title was acquired, and only decides that land can not be segregated from a riparian tract by the temporary possession of a "squatter" holding without right.

There is also nothing in the case of *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674, contrary to the rule. This case as far as it touched upon the subject simply decided the question of relation, as between an appropriator of water, and the right to its use by a riparian proprietor.

⁴ *Crawford Co. v. Hathaway* (Hall),

67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647. The Court in this case also intimates that a rule confining the riparian rights to the smallest legal subdivision recognized by the Government in disposing of its lands, namely, 40 acres, would be even more equitable. However, it does not decide this to be the rule in that State.

⁵ *Jones v. Conn*, 39 Ore. 30, 64 Pac. Rep. 855, 65 Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634; *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

and none of the other proprietors are injured by the use. But in times of scarcity, or when the country becomes more settled and the demand for the water is greater, this liberality must be restricted and the right limited to the common law rule of "reasonable use."⁶ The States which follow the common law in permitting the irrigation of land as a riparian right should follow that law in respect to the area of the land with the common law limitations and restrictions, otherwise the doctrine of appropriation which is also permitted in all of the States should be followed. To be sure, no man should be permitted to irrigate a vast tract of land acquired no matter from whom, nor under what titles, nor how far from the stream, by virtue of the ownership of a small tract of land which is actually riparian. This is especially true if this use infringes upon the rights of the other riparian proprietors or appropriators, who have acquired rights through the Arid Region Doctrine of appropriation.⁷ This use, as we have said, of water in another watershed would be a most unreasonable one. In the case of *Jones v. Conn*⁸ the Oregon Supreme Court quoted from the first edition of this work,⁹ to the effect that a riparian proprietor is entitled to any use of the waters which "does not work actual, material, and substantial damage to the common right which each proprietor has, as limited and qualified by precisely the equal right of every other proprietor." This was intended to convey the meaning that a riparian proprietor might convey waters to any lands which he might own bordering upon the stream regardless of their extent or source of title, provided that the rights of the other owners were not materially and substantially injured. In other words, that the whole question should depend upon the common law rule of "reasonable use," after taking into consideration the rights of all the other riparian proprietors upon the same stream.¹⁰ This is in fact the only rule which is recognized by the common law in any event, and under this rule the rights of all the proprietors upon the same stream must always be considered. A man with 10 acres which are riparian to a small stream might not be permitted to irrigate any of it, for the reason that the flow of

⁶ See Secs. 489-491.

⁷ For rights of appropriators, as against riparian owners, see Secs. 775-803.

⁸ 39 Ore. 30, 64 Pac. Rep. 855, 65 57—Vol. I—Ktn. on Irr.

Pac. Rep. 1068, 54 L. R. A. 630, 87 Am. St. Rep. 634.

⁹ See Kinney on Irrigation, First Ed., Sec. 276.

¹⁰ See Secs. 490, 511.

the stream might be sufficient only for the actual domestic and culinary uses of all of the riparian owners upon the same. Upon the other hand, a man with 1000 acres upon a large river might be entitled to irrigate all, provided always that the rights of the other owners are not materially and substantially injured thereby. Therefore, it seems to us that the only correct rule is the question of reasonable use by one owner, rather than any rule attempting to limit that use to a narrow strip of his land which actually borders upon the stream and was acquired from a single source of title.

§ 516. **Nonriparian owner has no right.**—As we have seen, riparian rights of all kinds depend upon the ownership of the banks of the streams or other bodies of water. The lands for which they are claimed must touch upon the water.¹ Hence it follows that one who is not a riparian owner can not use the water of a stream for irrigation as a riparian right. His claim would lack the essential element—ownership of the bank of the stream.² No person can take water from a stream, under the common law right, for the purpose of irrigating his tract of land which is separated from the stream by intervening lands belonging to other and riparian proprietors. Neither can a squatter gain title to the use of the waters of a stream belonging to another by diverting and using them for the purpose of irrigating land for which he has no title.³ If an owner of land, the whole tract of which is riparian while the title remains in him, sells a portion which does not touch upon the stream, he thereby cuts off from the part so conveyed all participation from the use of the stream and from all riparian rights therein, unless the conveyance declares to the contrary.⁴ It is held in California that land thus severed from the stream can never regain the riparian right, although it may thereafter be reconveyed to the person who originally owned it and who owns the part abutting on the stream.⁵ He becomes as to this tract a nonriparian owner.⁶ Any

¹ See Secs. 451, 452, 458.

² As to appropriation of the water by nonriparian owners, see Secs. 766, 767; *Hayden v. Long*, 8 Ore. 244; *Alta Land & Water Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Miller & Lux v. Madera Canal & Irr. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S. 391.

³ *Alta Land & Water Co. v. Hancock*, *supra*.

⁴ For the conveyance of the riparian right to irrigate land, see Sec. 535.

⁵ *Anaheim W. Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S. 1062.

⁶ But see acquisition of title to different tracts, Secs. 464, 465.

right to the use of the water of the natural stream by nonriparian owners or by a riparian owner for nonriparian land must be acquired by the right of appropriation for beneficial uses, according to the Arid Region Doctrine. This subject will be discussed in a subsequent chapter.⁷

§ 517. **Riparian proprietor has no right to irrigate nonriparian land.**—A riparian proprietor has no right to irrigate nonriparian land, by virtue of his title to other lands which touch upon the water of a stream and therefore are themselves riparian. Whatever may be his right to a reasonable use of the water of the stream to irrigate his riparian land, he has no right to conduct any of the water to irrigate other lands not riparian.¹ In this respect the common law as it is enforced in England and in the Eastern States is in accord with the Western American doctrine.² The rule as stated above is correct, and that, too, whether there is any injury to any other riparian proprietor on the stream or not. There is nothing

⁷ See Chap. 31, Secs. 585-594.

¹ Gould v. Stafford, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; Heilbron v. 76 Land & Water Co., 80 Cal. 189, 22 Pac. Rep. 62; Gould v. Eaton, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; Chauvet v. Hill, 93 Cal. 407, 28 Pac. Rep. 1066; Montecito Val. W. Co. v. Santa Barbara, 144 Cal. 578, 77 Pac. Rep. 1113; *Id.*, 151 Cal. 377, 90 Pac. Rep. 935; Bathgate v. Irvine, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; Broadmoor Dairy & L. S. Co. v. Brookside W. & Imp. Co., 24 Colo. 541, 52 Pac. Rep. 792; Cohen v. La Canada Land & W. Co., 142 Cal. 437, 76 Pac. Rep. 47; *Id.*, 151 Cal. 680, 91 Pac. Rep. 584; Crawford Co. v. Hathaway (Hall), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Boehmer v. Big Rock Creek Irr. Co., 117 Cal. 19, 48 Pac. Rep. 908; Alta Land & Water Co. v. Hancock, 85

Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; McClintock v. Hudson, 141 Cal. 275, 74 Pac. Rep. 849; Anaheim Water Co. v. Fuller, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1062; Union M. & M. Co. v. Dangberg, 81 Fed. Rep. 73, where the Court held that, under the law of riparian proprietorship, an upper riparian proprietor is entitled to make a reasonable use of a portion of the water of a river to irrigate his riparian land, but he does not have any right to take the water away from the river to irrigate other lands, that are not riparian. Citing Kinney on Irr., First Ed., Sec. 284.

² Swinton Waterworks Co. v. Wilts etc. Co., L. R. 7 H. L. 697, 45 L. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 284; McCarter v. Hudson etc. Co., 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S., 197, 118 Am. St. Rep. 754, 10 Am. & Eng. Cas. 116, aff'd, 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529. The question of irrigation was not involved in this case.

more completely antagonistic to the common-law theory of riparian rights, nothing which would more completely destroy the last vestige of the common law in the Western States adhering to that doctrine, than would the granting of the right of the diversion of the waters of a stream and conducting the same by means of ditches and canals for the irrigation of lands not adjoining the stream, by any persons who are not, with respect to such lands, riparian proprietors. As we have seen in previous sections, it is by a strained construction of the common law upon the subject that irrigation is permitted to the extent that it is practiced in the Western States, as a riparian right. As was held in a recent California case, the very theory upon which the right of a riparian owner to be protected in the use of the waters of a stream to which his lands are riparian is that, Nature having given these lands the benefit of the flow and the natural advantage of its use on the lands, one riparian owner may not divert these waters to lands not riparian to the injury of another riparian owner who can use them.³

The old common law rule has been modified and extended by liberal construction by the Courts of the Western common law States, in order to permit the right as it is there recognized and allowed. We have also seen that the common law right is based upon equality and equity and the right to a reasonable use of the water of a certain stream by all of the riparian owners thereon. Hence by permitting any one of these owners by virtue of his riparian ownership of a strip of land bordering upon the stream to irrigate great tracts of nonriparian land, would indeed abrogate the very principle of equality upon which the common law rule is based, and establish a rule based upon inequality and injustice. We would then have neither the common law rule nor the rule of the Arid Region Doctrine, which is based upon prior appropriation and diversion for beneficial purposes, but not upon the ownership of riparian land.⁴ If the irrigation of nonriparian lands was permitted by a riparian owner, even if there was no material injury to

³ *Miller v. Bay Cities W. Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S. 772.

See, also, *Redwater etc. Co. v. Reed*, 26 S. D. 466, 128 N. W. Rep. 702; *Swinton Waterworks Co. v. Wilts etc. Co.*, L. R. 7 H. L. 697, 45 L. Ch. N. S.

638, 33 L. T. N. S. 513, 24 Week. Rep. 284; *Boehmer v. Big Rock etc. Co.*, 117 Cal. 19, 48 Pac. Rep. 908.

See as to reasonable use for irrigation, Secs. 490, 491, 511-513.

⁴ See for Arid Region doctrine, Chaps. 585-594.

those below him on the stream, by prescription and adverse user, it might ripen into a right, which would result in great loss to the other owners on the stream.⁵

§ 518. **Priority of use gives owner no exclusive right.**—We have seen in a preceding section that under the common law a riparian proprietor can acquire no exclusive right to the use of water for any purpose based upon priority.¹ This is also the rule in the Western States which adhere to the common law in relation to the use of waters by riparian proprietors. In accordance with the principles of the common law a riparian proprietor can not, by mere prior settlement of his land and the use of water, acquire the exclusive right as against other proprietors to divert the entire stream or an unreasonable proportion thereof for irrigation. As was said by Mr. Justice McKinstry, in the case of *Lux v. Haggin*,² “In examining the numerous cases which establish that the doctrine of ‘appropriation’ is not the doctrine of the common law we meet an embarrassment of abundance.” Thus in the Western States, as well as in the Eastern and in England, under the common law, this principle is indisputable, that the right of a riparian proprietor to the use of the waters of a water course for the purpose of irrigation, as well as for other purposes, is a natural right, *ex jure naturae*, and is not acquired by use or occupation; hence it follows that an exclusive right can not be acquired by prior use or occupation.³

⁵ As to riparian lands under the strict construction of the common law, see Secs. 457-466.

¹ See Sec. 497.

² 69 Cal. 265, 390, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

³ See late case of *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, where the Court held that there is no such thing as prior riparian ownership so far as the distribution of the water for irrigation purposes is concerned; and that the right of the riparian owner, being a variable one, depends on the use by the other proprietors.

See, also, later decision of same case, 51 Ore. 318, 98 Pac. Rep. 1083;

Hill v. Newman, 5 Cal. 445, 63 Am. Dec. 140, 4 Morr. Min. Rep. 513; *Pope v. Kinman*, 54 Cal. 3; *Creighton v. Evans*, 53 Cal. 55; *Ferreira v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Hale v. McLea*, 53 Cal. 578; *Hanson v. McCue*, 42 Cal. 303, 10 Am. Rep. 299; *Pomeroy on Riparian Rights*, Sec. 133.

See, also, *Williams v. Altnow*, 51 Ore. 275, 95 Pac. Rep. 200; *Id.*, 97 Pac. Rep. 539, where the Court held that there is no priority between the rights of riparian proprietors to the use of the water of a non-navigable stream, but that their rights were equal, regardless of their location on the stream, or the date of acquiring title.

We will see in a subsequent portion of this work, however, that a prior use by a riparian proprietor of the waters of a stream, continued for a period of time and under such circumstances as are requisite to establish rights by prescription, will give him an exclusive right to the use of a certain amount of water.⁴

§ 519. Riparian owner and prior appropriator at the same time.

—As was said in a previous section, in all the Western States which adhere to the doctrine of riparian rights the appropriation of water for beneficial purposes is also allowed.¹ Thus, as will be readily seen, there are dual systems of laws governing the use of waters in these States, the doctrines of prior appropriation and riparian rights, which are continually clashing or “jostling” with each other as it were, yet still existing side by side.² This subject will be more thoroughly discussed in a subsequent portion of this work.³

The question which concerns us now is, Can a person be both a riparian proprietor and an appropriator under these dual systems of laws at the same time? Our answer to this question is in the affirmative. Both rights may be acquired by original and derivative acquisition; they may exist together and be held in common as property, and each is entitled to the protection of the law.⁴

As we view the law, there are two circumstances where a riparian proprietor upon a stream may also become an appropriator. These are, first, when he is among the first of the settlers upon the stream, and he makes his appropriation when the water was not needed by others and would otherwise run to waste; and, second, in times when there is a surplus or overflow of the waters of the stream. If a person enters a piece of land through or adjoining

⁴ For prescription and adverse user, see Secs. 1033-1085.

¹ For classification of States, see Sec. 507.

² Mill's Irr. Manual, p. 28.

For controversies between appropriators and riparian proprietors, see Secs. 810-823.

³ See Sec. 594.

⁴ *Lux v. Haggin*, first hearing (Cal.), 4 Pac. Rep. 919, 928; *Duckworth v. Watsonville Water & L. Co.*,

150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927; *Healy v. Woodruff*, 97 Cal. 464, 32 Pac. Rep. 528, in which the Court said, “It would certainly be strange if the first comer to a stream who acquires title to some land upon it has less right to the water of the stream than one who owns no land there at all.”

See, also, *Edgar v. Stevenson*, 70 Cal. 286, 11 Pac. Rep. 704.

which a stream runs, and appropriates the water to some useful purpose including that of irrigation, before other persons have entered other lands upon the stream, who might be injured by his appropriation, he stands in the position of a prior appropriator as to subsequent settlers to the extent of his appropriation; and, within this extent, he may divert all of the water of the stream, if it is actually necessary for the purpose for which it is appropriated, without any obligation upon his part to return any of it to the natural channel.⁵ And, in a case of this kind, bearing in mind that by his appropriation he is limited by its extent, if the water appropriated is not sufficient for his needs, he may claim as against the other riparian proprietors above upon the stream the right to have the water flow down to his riparian land, less what they may need for their domestic uses.⁶ The two rights may exist in the same person as long as there is no waste of the water taken under either system or both systems. Upon the other hand, after the needs of a prior appropriator of the waters of a stream are satisfied, he, as a riparian proprietor, is not entitled to have the excess flow down to him in the channel of the stream.⁷ And in Oregon the rule is, that a settler on a non-navigable stream has an election either to rely upon his rights as a riparian proprietor or to make an appropriation of

⁵ For extent of the right of appropriation, see Secs. 776-786; *Duckworth v. Watsonville W. Co.*, 150 Cal. 520, 89 Pac. Rep. 338.

See, also, *Ortman v. Dixon*, 13 Cal. 34; *Huffner v. Sawday*, 153 Cal. 86, 94 Pac. Rep. 424; *McDonald v. Bear R. Co.*, 13 Cal. 220, 15 Cal. 145, 1 Morr. Min. Rep. 626; *Ison v. Nelson M. Co.* 47 Fed. Rep. 199; *McKinney v. Smith*, 21 Cal. 374, 1 Morr. Min. Rep. 650; *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *Nevada etc. Co. v. Kidd*, 37 Cal. 282; *Lux v. Haggins*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Smith v. O'Hara*, 43 Cal. 375, 1 Morr. Min. Rep. 671; *Cave v. Tyler*, 133 Cal. 566, 65 Pac. Rep. 1089; *Thorp v. Freed*, 1 Mont. 651; *Smith v. Hawkins*, 127 Cal. 119, 59 Pac. Rep. 295; *Lobdell v. Simpson*, 2 Nev. 274, 90 Am. Dec. 537; *Seaweed v. Duncan*,

47 Ore. 640, 84 Pac. Rep. 1043; *Kaler v. Campbell*, 13 Ore. 596, 11 Pac. Rep. 301; *Van Bibber v. Hilton*, 84 Cal. 585, 24 Pac. Rep. 308.

⁶ *Van Bibber v. Hilton*, 84 Cal. 585, 24 Pac. Rep. 308.

⁷ *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678.

See, also, the case of *North Powder Mill Co. v. Coughanour*, 34 Ore. 9, 54 Pac. Rep. 223, where the Court held that the first settler on the stream might elect his right, but he can not do both, as the two rights are incompatible. *Brown v. Baker*, 39 Ore. 66, 65 Pac. Rep. 799, 66 Pac. Rep. 193.

See, also, *Seaweed v. Duncan*, '47 Ore. 640, 84 Pac. Rep. 1043; *Davis v. Chamberlain*, 51 Ore. 304, 98 Pac. Rep. 154; *Williams v. Altnow*, 51 Ore. 275, 95 Pac. Rep. 200, 97 Pac. Rep. 539.

the water if it is free and subject to appropriation; but he can not do both. However, in a great majority of the Western common law States this is not the rule, but both rights may be held by the same person.⁸

Upon the second proposition stated above, at times when there is a surplus or overflow of water, and no injury is done to any of the lower riparian proprietors, one proprietor may make a legal appropriation of the surplus water of the stream, and acquire a title to the use of the same, which will be valid as against all the riparian owners upon the stream and also as against all subsequent appropriators.⁹ "It is the advantage which the law gives and which necessarily follows prior occupancy and appropriation."¹⁰ The Oregon rule is upon the theory that the riparian owners are tenants in common, and that the appropriators are owners in severalty. As was said in a recent case upon this subject: "It is the established doctrine in this State that a settler upon public lands which border upon a non-navigable stream may claim the use of the water, either as a riparian owner or as an appropriator, but he can not do both. A reason for this is that one can not at the same time hold title to the same thing both as tenant in common and in sev-

⁸ For the rule in Oregon, see cases cited *supra*.

But see the late case of *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728, where the Court held that every riparian owner, regardless of the date of settlement, is entitled to a quantity of water reasonably essential to his domestic use and for the watering of his stock, including a sufficient supply for the proper irrigation of such garden produce as may be essential to the proper sustenance of his family; but that for the further irrigation of his lands he must make an appropriation, by taking some step towards the diversion of the water, or by some other good and sufficient notice.

⁹ *Edgar v. Stevenson*, 70 Cal. 286, 11 Pac. Rep. 704; *Gallagher v. Basey*, 1 Mont. 457; affirmed, 87 U. S. 20 Wall. 670, 22 L. Ed. 452; *Brown v.*

Smith, 10 Cal. 508; *Ortman v. Dixon*, 13 Cal. 33; *McKinney v. Smith*, 21 Cal. 374, 1 Morr. Min. Rep. 650; *Nevada Co. v. Kidd*, 37 Cal. 282; *Smith v. O'Hara*, 43 Cal. 375, 1 Morr. Min. Rep. 671; *Kaylor v. Campbell*, 13 Ore. 596, 11 Pac. Rep. 301; *Healy v. Woodruff*, 97 Cal. 464, 32 Pac. Rep. 528.

¹⁰ *Healy v. Woodruff*, *supra*.

In *Senior v. Anderson*, 130 Cal. 290, 62 Pac. Rep. 563, the Court held that a lower riparian owner, who had given notice of the appropriation of a certain amount of water flowing through his land, is entitled to the quantity reasonably necessary for the uses named in his notice, if such quantity would naturally flow in the stream at the point of diversion, as against all above him on the same stream, subject to rights antecedently acquired.

eralty.”¹¹ This reasoning may be correct as to the different claims for the same water, but as to the different rights to the water there is no reason why a person may not be both an appropriator and a riparian proprietor at the same time.

§ 520. **Manner of taking the water.**—Where a person has the riparian right to irrigate land the manner of taking the water from the stream is immaterial, so long as it does not interfere with the rights of the other proprietors. The water may be taken out by means of ditches and canals conducting the water from the stream to the place where it is used. We do not see any reason why the ditches may not be taken out above the lands of the owner, if arrangements can be made with the owners of the lands above to that effect. Of course this would prevent the water diverted from washing the riparian lands between the intake of the ditch and the lands of the user. So, if the intervening owners refuse to permit this, either on account of actual injury, or to prevent such a diversion from maturing into a right, an injunction will lie.¹ The water may be taken by means of an intercepting tunnel; however, the right to the water can not be extended by this means to the application to a use to which the stream itself can not be properly applied.² Pumps run by any kind of power may be used to raise the water to the height where it is needed.³ Several riparian proprie-

¹¹ *Caviness v. La Grande Irr. Co.*, — Ore. —, 119 Pac. Rep. 731, citing *Low v. Schaffer*, 24 Ore. 239, 33 Pac. Rep. 678; *North Powder Milling Co. v. Coughanour*, 34 Ore. 9, 54 Pac. Rep. 223; *Brown v. Baker*, 39 Ore. 66, 65 Pac. Rep. 799, 66 Pac. Rep. 193; *Davis v. Chamberlain*, 51 Ore. 304, 98 Pac. Rep. 154.

¹ *California Pastoral & Ag. Co. v. Enterprise Canal Co.*, 127 Fed. Rep. 741; *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

For injunction by riparian owners, see Remedies.

See, also, *Heilbron v. Kings River & F. C. Co.*, 76 Cal. 11, 17 Pac. Rep. 933; *Heilbron v. Fowler Switch Canal*

Co., 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183; *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S., 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823; *Redwater etc. Co. v. Jones*, 26 S. D. 466, 130 N. W. Rep. 85.

² *McClintock v. Hudson*, 141 Cal. 275, 74 Pac. Rep. 849.

See, also, *Subterranean Waters*. Chaps. 59-62, Secs. 1148-1211.

³ *Charnock v. Higuerra*, 111 Cal. 473, 44 Pac. Rep. 171, 32 L. R. A. 190, 52 Am. St. Rep. 195; *Chatfield v. Wilson*, 31 Vt. 358; *Id.*, 28 Vt. 49; *Id.*, 27 Vt. 67.

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Elliott v. Fitchburg R. Co.*, 10

tors may join in the diversion of the water by means of pumps or otherwise for their common use, provided that they take no more than the amount they are all entitled to.⁴

A very common method of diverting the water in certain localities is by means of water wheels run by the current of the stream. The amount actually diverted by this means is usually very small, and it can be elevated but a few feet. But there is another question which enters into the consideration of this feature of the case, and that is the amount of water required to flow in the stream to run the wheel is very great as compared with the water lifted. Now the question is, can a riparian owner not only lay claim to the water of a stream running through his premises to the extent of the water actually used in irrigation, but also may he compel the owners above, who have the same rights of irrigation that he has, to let water flow down to his land, for which water he has no use except to run his wheel to raise a small quantity thereof? We are of the opinion that he can not do this, and would consider this an antiquated and wasteful method of using the water. This question has never been decided as regarding the rights of riparian proprietors. But the Circuit Court of Appeals, in the case of *Schodde v. Twin Falls Land & Water Co.*,⁵ held that, as between appropriators, this right could not be claimed.⁶ All of the authorities hold that a riparian owner must use the water reasonably with reference to the correlative rights of the other owners on the same stream. We would classify this as a most unreasonable and wasteful use of the water, especially in a section where the water is scarce.

§ 521. Change in manner of taking the water—Change of use.—There is no doubt but that a riparian owner has the right to change the place of diversion of the water, when others are not injured by the change.¹ In like manner a change in the locality of the ditch

Cush. 191, 57 Am. Dec. 85; *Earl Norbury v. Kitchin*, 7 L. T. Rep. N. S. 685; *Verdugo W. Co. v. Verdugo*, 152 Cal. 655, 93 Pac. Rep. 1021.

⁴ *Verdugo W. Co. v. Verdugo*, 152 Cal. 655, 93 Pac. Rep. 1021.

⁵ 161 Fed. Rep. 43, 88 C. C. A. 207. This case was affirmed by the Supreme Court of the United States April 1, 1912. See 224 U. S. 107, 56 L. Ed.

⁶ For methods of diversion by appropriators, see Secs. 722-724.

See, also, for wasting water, Secs. 911-916.

¹ *San Luis W. Co. v. Estrada*, 117 Cal. 168, 48 Pac. Rep. 1075.

See, also, change of place of diversion by appropriators, Secs. 857-859.

may also be made. "All that the law requires is, that the mode or manner of using the water should not have been materially varied, to the prejudice of others."² So, also, may the change of the place of use be made from one portion of his land to others, so long as he keeps the water on lands which are strictly riparian.³ Also a change of the use itself may be made, so long as it does not interfere with the rights of others. However, as is the case of appropriators, the use can not be changed from one which does not consume the water to one where the water is practically consumed. Hence an owner, having the right to divert water and run it in a ditch or flume along the higher levels and thence down into the stream for the purpose of developing power, has no right to change the use to that of irrigation, where the water would be consumed, if other rights have intervened which would be injured by the change.⁴

§ 522. Surplus water must be returned to the natural stream.—After a reasonable use of the water for the irrigation of his land, it is the duty of every upper riparian owner to return to the natural channel of the stream, by safe, adequate, and water-tight appliances, above the lands of the next lower riparian owner, all the surplus water which may have been taken out by him and not absorbed and used upon his lands entitled to such water.¹ This is the

² *Belknap v. Trimble*, 3 Paige (N. Y.) 577; *Whittier v. Cocheco Mfg. Co.*, 9 N. H. 454, 32 Am. Dec. 382; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571; *Angell on Water Courses*, Sec. 224.

³ See authorities cited *supra*.

For changes which may be made by appropriators, see Secs. 856-873.

⁴ See, also, for the change of use by appropriators, Secs. 869-872.

¹ *Union M. & M. Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Weiss v. Oregon Iron & S. Co.*, 13 Ore. 496, 11 Pac. Rep. 255; *Union M. & M. Co. v. Dangberg*, 2 Sawy. 450, Fed. Cas. No. 14,370; *Id.*, 81 Fed. Rep. 73; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep.

879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; and also *Id.*, 101 Cal. 32, 35 Pac. Rep. 429; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325; *Stanford v. Felt*, 71 Cal. 249, 16 Pac. Rep. 900; *Barrows v. Fox*, 98 Cal. 63, 32 Pac. Rep. 811; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Wiggins v. Muscupiabe L. & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Fleming v. Davis*, 37 Tex. 173; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Hargrave v. Cook*, 108 Cal. 72, 41 Pac. Rep. 18, 30 L. R. A.

common law rule of England and the Eastern States, as well as that of the Western States, and that, too, whether the water is used for irrigation or for some other purpose.² An injunction for all waste of the water will lie against the owner, where, after the use, he permits it to run where it will, without providing the means for its return to the natural stream.³ And, although a riparian proprietor is, as we have seen, entitled to a reasonable use of the water for irrigation,⁴ he can not dam it up and so spread out the water and cause its loss by evaporation, so that it will cause injury to the lower proprietors.⁵ The manner of the return of the surplus to the stream is immaterial, so long as it is practically all returned before the land of the lower proprietor is reached.⁶ And, so long as his rights to the water are not impaired, he can not require the upper proprietor to return it in any particular manner.⁷

§ 523. Mere possession without title gives no riparian right.—Riparian rights are mere incidents to the ownership of the soil through which or adjoining which the stream runs; and, while they may relate back by fiction of law to the date of the *bona fide* settlement or filing upon the land, by virtue of the patent subsequently

390; *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971; *Crawford Co. v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Missouri P. R. Co. v. Keys*, 50 Kan. 205, 40 Pac. Rep. 275, 49 Am. St. Rep. 249; *Watkins Land Co. v. Clements*, 98 Tex. Civ. App. 578, 86 S. W. Rep. 733, 70 L. R. A. 964, 107 Am. St. Rep. 653; *Nielson v. Sponer*, 46 Wash. 14, 89 Pac. Rep. 155, 23 Am. St. Rep. 910; *City of Canton v. Shock*, 66 Ohio St. 19, 63 N. E. Rep. 600, 58 L. R. A. 637, 90 Am. St. Rep. 557.

² *Blanchard v. Baker*, 8 Greenl. (Me.) 253, 23 Am. Dec. 504; *Anthony v. Lapham*, 5 Pick. (Mass.) 175; *Mentone Irr. Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222.

See, also, Sec. 497.

³ *Campbell v. Grimes*, 62 Kan. 503, 64 Pac. Rep. 62, citing *Kinney on Irr.*, First Ed., Secs. 165, 166; *McClintock v. Hudson*, 141 Cal. 275, 74 Pac. Rep. 849; *Ferreira v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325.

⁴ See Sec. 511.

⁵ *Barneich v. Mercy*, 136 Cal. 205, 68 Pac. Rep. 589; *Shotwell v. Dodge*, 8 Wash. 337, 36 Pac. Rep. 254.

See, also, the subject of wasting water, Secs. 911-916.

⁶ *Mason v. Cotton*, 2 McCreary 82, 4 Fed. Rep. 792; *Wiggins v. Muscupiabe L. & W. Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181.

⁷ *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181.

issued, yet they do not vest until the patent issues.¹ Hence it follows that one who squats upon and occupies and cultivates a tract of land bordering upon a stream, without acquiring any title to the land, acquires no riparian rights to irrigate the land in his possession, or any other riparian rights in and to the waters of the stream.²

But in this connection a distinction must be made between a squatter and an actual and *bona fide* settler upon the public lands under the laws of the United States. Even though the latter's rights be in an incomplete and inchoate condition, if he has fully complied with all the laws and requirements relative to his settlement he is entitled to all the riparian and other rights connected with the land as though he had already received his patent.³ And, where a party has a contract for the purchase of land adjoining a stream upon conditions not yet fulfilled by him, and he has not yet acquired the fee, the doctrine of riparian rights can not be invoked in his favor, although they may be invoked in behalf of the real owner.⁴ And again, one who squats upon, occupies, and cultivates a portion of riparian land belonging to another, claiming adversely under the belief that it is Government land, can not gain any title to the use of the waters of the stream by diverting and using them for the purpose of irrigating such land.⁵

§ 524. **Right to water in artificial water courses.**—As we have seen in a previous section, there are circumstances under which riparian rights may attach to artificial water courses.¹ One of

¹ For doctrine of relation as to riparian rights, see Secs. 752-755.

² *Kendall v. Joyce*, 48 Wash. 489, 93 Pac. Rep. 1091; *Alta Land & W. Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217; *Smith v. Logan*, 18 Nev. 149, 1 Pac. Rep. 687; *Brown v. Ashley*, 16 Nev. 311; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Id.*, 91 Cal. 146, 27 Pac. Rep. 543; *Id.*, 101 Cal. 32, 35 Pac. Rep. 429.

³ *Sturr v. Beck*, 6 Dak. 71, 50 N. W. Rep. 486, affirmed in 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep.

350; *Faull v. Cooke*, 19 Ore. 455, 26 Pac. Rep. 662, 20 Am. St. Rep. 836.

See, also, acquisition of title to Government lands and riparian rights attaching thereto, Sec. 445.

See, also, appropriation of water by squatters, Sec. 687.

⁴ *Smith v. Logan*, 18 Nev. 149, 1 Pac. Rep. 678.

⁵ *Alta Land & W. Co. v. Hancock*, 85 Cal. 219, 24 Pac. Rep. 645, 20 Am. St. Rep. 217.

¹ As to riparian rights on artificial water courses, see Sec. 743.

these is where the artificial channel is entirely substituted for the natural channel. When this is the case there is no reason on principle, in those Western States which still adhere to the common law, why an owner of land through which or adjoining which the artificial stream runs may not, by virtue of his ownership, have the right to make a reasonable use of the water for irrigation. Such a stream, however, must be created under such circumstances as to indicate that it is to be permanent the same as though it was created by Nature.² There are very few cases that have arisen in the Western States, where irrigation is mostly practiced, which involve this precise point. And the general rule is that in all artificial channels, such as canals, ditches, conduits, or aqueducts used to convey the water from a natural stream, riparian rights can not attach.³ However, the Oregon Court, in a very recent case,⁴ has taken a rather advanced position in this respect, and holds that, after channels are artificially opened, and as such are acquiesced in, as branches of the main stream for the period prescribed by the statute of limitations, they have become fixed, and the owners of lands adjacent thereto are entitled to the same consideration and to the same rights as are those on the main and unquestioned natural channel.⁵

§ 525. Conclusions.—From the discussion in this chapter it will be readily seen that irrigation as a riparian right is recognized as one of the principal rights of riparian owners to the use of the waters of natural streams in the ten Western States which adhere

² *Sutcliffe v. Booth*, 32 L. J. Q. B. N. S. 136, 9 Jur. N. S. 1037; *Blackburne v. Somers*, Ir. L. R. 5 Eq. 1.

See, also, as to appropriation from artificial water courses, Sec. 662.

³ See Sec. 473.

See, also, *Creighton v. Kaweah Co.*, 67 Cal. 221, 7 Pac. Rep. 658; *Green v. Carotto*, 72 Cal. 267, 13 Pac. Rep. 685; *Outhouse-Cottel v. Berry*, 42 Ore. 593, 72 Pac. Rep. 584, but where the Court held that where owners of different parcels of land conduct waters across the same in an artificial channel for irrigation, and do not define their

respective interests in the water, their reciprocal rights thereto are measured and determined as if they were riparian owners upon a natural stream. Citing *Gould on Waters*, 3d Ed., Sec. 225; *Townsend v. McDonald*, 12 N. Y. 381, 14 Barb. 460, 64 Am. Dec. 508.

⁴ *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728.

⁵ Citing *Outhouse-Cottel v. Berry*, 42 Ore. 593, 72 Pac. Rep. 584; *Harrington v. Demarris*, 46 Ore. 111, 77 Pac. Rep. 603, 82 Pac. Rep. 14, 1 L. R. A., N. S., 756.

to the common law theories of riparian ownership.¹ That in order to attain to the use of water for this purpose, as it is permitted in these States, the strict rule of the common law, upon this subject, has been extended and enlarged until it practically exists as a fiction only.² We will also see in the future chapters of this work that in these very States, side by side with this common law rule, there exists another system for the use of water, based upon a prior appropriation for some beneficial use. On principle these two systems are directly opposed to each other, and, hence, necessarily, there is more or less clashing between them. In fact it will be noticed that in the States endeavoring to uphold both of these rules there is much more litigation than there is in the States which have abolished the rule of riparian rights, and have adopted the Arid Region Doctrine of appropriation. Especially is this true in States which have a strong system of State control, notably Wyoming. We can not but believe that had a State adopted either one rule or the other, and not attempted to uphold both, it would have been much better for the commonwealth and also for the water users. Or better still, had the Government in the early history of the opening of its public lands for sale adopted some equitable rule for the disposition of its water with the lands, so that each settler could approximate what right he had to the water when he made his entry, we would not have had this endless confusion of rights and litigation which we are having. This has been done in other new countries, notably Canada and the Northwest Territories, where, profiting by our lack of system, or rather too many systems, at an early period of the opening for settlement of the public lands, a uniform system for the use of the waters of all natural streams was adopted, with a strong Governmental control. And in this country, in an English Province, it is especially noticeable that the English rule of the common law is abolished, and also

1 For the ten States adhering to this right, see Sec. 507.

For the conveyance of lands and water rights by riparian proprietors, see Secs. 526-535.

For rights of appropriators as against riparian owners, see Secs. 810-823.

For prescription as against riparian rights, see Secs. 1039-1041.

For doctrine of relation as to riparian rights, see Secs. 742-756.

For doctrine of estoppel by riparian owners, see Secs. 1121-1128.

2 For enlargement of the common law, see Secs. 510-513.

how few cases which involve the question of water rights have gone to the Courts of last resort.³

But our Congress, in its wisdom, did not see fit to adopt such a rule in the early history of its public land system, hence we have inherited this endless confusion as to water rights. Claimants must prosecute their cases to the Courts of last resort at sometimes ruinous expense, only to have that Court overturn some supposed well-settled theory of the case and adopt an entirely new one. The doctrines of appropriation and riparian rights are not only clashing with each other, but often with themselves; and, in order to keep up the interest, both of these doctrines are always at war with the statutory enactments, known as Irrigation Acts, or Codes, or Water Codes, adopted in nearly every Western State, and no two of which are alike. And not only is there endless litigation upon the subject, thereby encumbering our Reports, but also text books must be written upon the subject, attempting to reconcile some of these questions, and also to define what rights an individual or corporation may have under certain conditions in and to the waters of the natural streams and other sources of natural supply. All these, and many kindred and now necessary evils, have developed on account of the lack of foresight upon the part of the National Government in not taking into consideration the fact that the waters in this Western arid country were of at least equal value and importance as the lands through which they flow.

³ For Irrigation in Canada and the Northwest Territories, see Chap. 10, Secs. 177-237.

CHAPTER 27.

GRANTS AND CONTRACTS OF RIPARIAN RIGHTS.

- § 526. Scope of chapter.
- § 527. Public grants of rights in public waters.
- § 528. Public grants of rights in private waters.
- § 529. Private grants of riparian rights.
- § 530. Private grants—Rights of grantee limited to the terms of the deed.
- § 531. Private grants—Rights included with the land.
- § 532. Private grants—Division of land at water's edge.
- § 533. Private grants—Reservation of riparian rights.
- § 534. Private grants—Grants of riparian rights only separate and apart from the land.
- § 535. Private grants—Grants of riparian rights involving the consumption of water.

§ 526. **Scope of chapter.**—The relative or correlative rights of riparian owners may be changed by grant or contract.¹ In this chapter we shall not attempt to discuss all of the phases of grants or conveyances of riparian rights, but will discuss only those which we think are pertinent to the main subject of this work.

§ 527. **Public grants of rights in public waters.**—In the early history of the common law it was held that the Crown could grant to a subject the soil under tide waters and could also grant exclusive rights of fishery in such waters.¹ But in modern times it has been decided in England that it is incompetent for the Crown to abbreviate or destroy by its own act the public rights either of navigation or fishery, as it can not confer upon its grantee a greater power in that respect than that with which it itself is invested.² And, in general, we may say that in this country the Federal Gov-

¹ *Perry v. Parker*, 1 Woodb. & M. 280, Fed. Cas. No. 11,010; *Miner v. Thomas Furnace Co.*, 12 Ohio C. D. 490; *Smith v. Holloway*, 124 Ind. 329, 24 N. E. Rep. 886; *Yocco v. Conroy*, 104 Cal. 468, 38 Pac. Rep. 107.

¹ See Secs. 325, 363.

See, also, *Williams v. Wilcox*, 8 Ad. & Ed. 314, 3 New. & P. 606, 1 W. W. & H. 477, 7 L. J. Q. B. N. S. 229;

Rex v. Westham, 10 Mod. 159; *Rex v. Bristol Dock Co.*, 6 B. & C. 181, 108 Eng. Reprint 420; *Lord Fitzwalter's Case*, 1 Mod. 105; *Rex v. Clark*, 12 Mod. 615, 88 Eng. Reprint 1558; *Hale, De Jure Maris*, Chap. 5; *Colchester v. Brooke*, 7 Q. B. 339, 15 L. J. Q. B. N. S. 59, 9 Jur. 1090.

2 1 Bla. Com. 286; *Doe v. York*, 14 Q. B. 81; 37 and 38 Viet., Chap. 40;

ernment and the several States have followed the earlier common law decisions of England in this respect to the effect that the State may grant to individuals or corporations the soil of public navigable waters or the exclusive right of fishery in them,³ subject, of course, to the public right of navigation.⁴

§ 528. **Public grants of rights in private waters.**—As respects private water courses, as we have seen in the previous sections, riparian owners, who own the soil bordering upon the same, have all the rights that attach to such ownership and which are under the common law called riparian rights. So in that part of the country designated as the public lands, the United States as the proprietor of such lands had or has the same rights and property in the streams flowing through them that would be possessed by any other riparian proprietor.¹ And, in the absence of legislation by Congress limiting the effect of the grants, patents for public lands from the General Government pass together with the fee of the soil and as incident thereto all of the common law rights of the natural streams, which flow through them, provided, of course, that the laws of the State including such public lands have not abolished or abrogated the common law of riparian rights.² But, in a case of legislation by Congress, all Acts limiting the effect of the grant are in the nature of a reservation by the Government, and the patents issued thereafter must be subject to them. Such is the case of the Act of Congress of July 26, 1866, hereafter further discussed.³ The effect of this statute is to preserve the priority

Vyner v. Mersey Docks, 14 C. B. N. S. 758; *Gould on Waters*, Sec. 21 and notes; also Sec. 167.

³ *Commonwealth v. Alger*, 7 Cush. 53; *Arnold v. Mundy*, 1 Holst. 1, 10 Am. Dec. 356; *Bell v. Gough*, 23 N. J. L. 624; *Atty. Gen. v. Delaware Ry Co.*, 27 N. J. Eq. 1, 631; *Galveston v. Menard*, 30 Tex. 349; *People v. Thompson*, 23 Hun, 457; *Middleton v. Prichard*, 4 Ill. 510, 38 Am. Dec. 112.

⁴ For the right of navigation, see Chap. 16, Secs. 341-357.

¹ For the United States as a riparian proprietor, see Sec. 480.

² For the abrogation of riparian rights, see Secs. 588-594.

See, also, *Union Mill Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Woodruff v. North Bloomfield G. M. Co.*, 8 Sawy. 628, 9 Id. 441, 18 Fed. Rep. 753; *Mathews v. Ferrea*, 45 Cal. 51.

³ See Secs. 611-618.

See U. S. Rev. Stat., Sec. 2339, which reads as follows: "Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are

against those who have received patents to their lands, subsequent to the enactment.⁴

In this country a grant by a State conveying a tract of territory, in the absence of legislation reserving any portion to the contrary, carries with it to the grantee a right of property in all the water courses within the boundary of the grant and hence all the riparian rights that attach to those water courses as an incident to the soil.⁵ In fact it may be said that the same rule of law applies in the case of public grants as applies in private grants to the effect that unless a reservation is made the grant passes title to all riparian rights incident to the ownership of the land by which the stream flows.⁶

§ 529. Private grants of riparian rights.—In this country when an individual has once acquired an ownership in a watercourse, as an incident to his land adjoining the same, by a grant from the State, an individual, or from any other source, he may in turn convey his ownership to another in whole or in part. He may convey

recognized and acknowledged by the local customs, laws, and decisions of the Courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purpose aforesaid is hereby acknowledged and confirmed."

See, also, *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Atchison v. Peterson*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Flagstaff Silver Mining Co. v. Tarbet*, 98 U. S. 463, 25 L. Ed. 253; *Thorpe v. Freed*, 1 Mont. 651.

⁴ See on this point *Union Mill Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Hobart v. Ford*, 6 Nev. 77; *Shoemaker v. Hatch*, 13 Nev. 261; *Rivers v. Burbank*, 13 Nev. 398; *Jones v. Adams*, 19 Nev. 78; *Broder v. Natoma W. &*

M. Co., 50 Cal. 621; affirmed in 101 U. S. 274, 25 L. Ed. 790; *Lansdale v. Daniels*, 100 U. S. 113, 25 L. Ed. 587; *Titcomb v. Kirk*, 51 Cal. 288; *Cave v. Crafts*, 53 Cal. 135.

⁵ See *Lunt v. Holland*, 14 Mass. 149; *Middleton v. Pritchard*, 4 Ill. 510, 38 Am. Dec. 112; *Canal Com's v. People*, 5 Wend. 423; *People v. Canal Appraisers*, 13 Wend. 355; *Coovert v. O'Conors*, 8 Watt. 470 (Pa.), where the Court held that a grant from the commonwealth of vacant land bounded by a stream which has not been declared navigable by law, and following its courses and distances, passes the right to the soil to the middle of the stream, and although the stream may subsequently to the grant be declared a public highway that does not divest the property previously acquired by a grant from the commonwealth.

⁶ For private grants of riparian rights, see Secs. 530-536.

all or a part of his riparian rights, and his grantee will take all the title and rights that the grantor himself had and which had been conveyed to him, but of course no more. Such owner may convey the riparian rights in the stream to one person and the adjoining land to another; or he may reserve certain of his rights in the stream; or he may convey the land, without making any reservation in the deed, to his grantee, who, in that case, would be the riparian proprietor in the grantor's stead, and would own to the middle of the stream and be entitled to all the riparian rights that are attached to the land.¹ But it is held that a grant of a stream by that name will not pass the land over which the water runs. It must be described as so much land covered by water.² Also an owner, by a reservation in the instrument of conveyance directly expressed or clearly implied to such effect, may grant the land adjoining the watercourse and may reserve to himself all the property in the watercourse itself and all the rights attached thereto by virtue of his former ownership in the land adjoining.³

In all cases of grants, however, by riparian owners it must be understood that they can be made only subject to the right of non-contracting owners. This is especially true where the right granted involves a use or a consumption of the water. The rights of the riparian owners who did not join in the conveyance, and who are entitled to an equal or correlative use of the water in common with the grantor, are not affected by the conveyance. This will be further discussed in subsequent sections of this chapter.⁴

§ 530. Private grants—Rights of grantee limited to the terms of the deed.—As between the grantor and the grantee the rights granted are always limited by the terms of the instrument of conveyance.¹ The grantee may be limited by the terms of the deed in the application of the water to a certain particular use. The words

¹ *Ex dem. Hartshorn v. Wright*, 1 Peters (Cir. Ct.) 64, Fed. Cas. No. 6169; *Strong v. Benedict*, 5 Conn. 210; *Ashley v. Pease*, 18 Pick. 268 (Mass.); *Biglow v. Battle*, 15 Mass. 313.

² *Jackson v. Halstead*, 5 Cow. (N. Y.) 216.

³ *Claremont v. Carlton*, 2 N. H. 371, 9 Am. Dec. 88; *Hay's Executor v. Bowman*, 1 Rand. (Va.) 417; *Water-*

man v. Johnson, 13 Pick. 261; *Brown v. Kennedy*, 5 H. & Johns. (Md.) 195, 9 Am. Dec. 503; *Gavit v. Chambers*, 3 Ohio 495. In regard to reservation in grants, see *Angell on Water Courses*, Secs. 173-190.

⁴ See Secs. 534, 535.

¹ For the rule for the construction, see Secs. 919, 1007.

in the indenture, the situation of the parties, the uncertainty as to the quantity of the water granted, and the usage by the grantee, may all be introduced in evidence as tending to show that it was intended to limit the quantity to the particular use for which it was granted and originally intended to be applied.² In general we may say that the right to the use of the water course, *ex jure naturae*, or as an incident to the land, under the common law, is subject to be abridged, enlarged, or modified by grant. But the extent of such abridgement, enlargement, or modification is to be measured by the express stipulation contained in the grant or instrument of conveyance itself.³ These special rights that may be acquired in watercourses sometimes approach those rights which are classified by law writers as easements, and can only be created by deed,⁴ and when so created the grantor can not derogate from the terms of the deed, and the nature and extent of the rights of the parties can only be determined by the terms of the instrument of conveyance itself.⁵

² Strong v. Benedict, 5 Conn. 210; Livingston v. Ten Broeck, 16 John. 14; Biglow v. Battle, 15 Mass. 313; Luttrell's Case, 4 Coke 86; Robert May's Case, 9 Coke 113; Howell v. King, 1 Mod. 190, 86 Eng. Rep. F. R. 821; Lawton v. Ward, 1 Lord Raymond 75, 91 Eng. Rep. F. R. 946; Sprague v. Snow, 4 Pick. 54.

³ On the general subject, see Angell on Water Courses, Chap. 5; Gould on Waters, Chap. 10.

See, also, Farnham on Waters and Water Courses, Chap. 24.

⁴ Coke Litt. 9 A.; Hewlins v. Shipham, 5 B. & C. 221, 108 Eng. Rep. 82; Croker v. Cowper, 1 C. M. & R. 418; Cook v. Sterns, 11 Mass. 533; Williams v. Wadsworth, 51 Conn. 277; Nellis v. Munson, 108 N. Y. 453; 24 Hun 575; Wright v. Newton, 130 Mass. 552; Dority v. Dunning, 78 Me. 381, 6 Atl. Rep. 6; Wilder v. Wheeler, 60 N. H. 351; Jones v. Pettibone, 2 Wis. 308; Peasley v. Tower, 62 N. H. 432; Warren v. Carey, 45 Mass. 78, 12 N. E. Rep. 999.

See, also, Andrews v. Donnelly, — Ore. —, 116 Pac. Rep. 569; Peterson v. Cody, 14 Cal. App. 502, 112 Pac. Rep. 558.

⁵ Northam v. Hurley, 1 E. & B. 665, 22 L. J. Q. B. N. S. 183, 17 Jur. 672, 72 Eng. Com. L. 663; Whitehead v. Parks, 2 H. & N. 870, 27 L. J. Exch. N. S. 169; Sharp v. Waterhouse, 7 E. & B. 816, 3 Jur. N. S. 1022, 27 L. J. Q. B. N. S. 70; Tipping v. Eckersley, 2 K. & J. 273; Risien v. Brown, 73 Tex. 135, 10 S. W. Rep. 661, where it was held that an owner of a tract of land upon and through which a stream of water rises and flows, in selling parts of the tract fronting upon the stream, may reserve exclusive water privileges, and when in selling the residue of the tract he sells the land and especially conveys the water privileges theretofore reserved such grantee holds such privileges as against another vendee holding a part of the tract upon the stream, but in whose deed the water privileges were reserved.

§ 531. **Private grants—Rights included with the land.**—Riparian rights are a part of an estate and usually constitute a large proportion of its value, especially if the stream upon which the land borders is of any considerable size. As we have seen, these rights are of value and are counted as property.¹ As such, they are a part of the estate which will pass to the grantee under any general conveyance of the estate, unless they are expressly reserved, or circumstances showing the intention to reserve them are so strong as to overcome the presumption that they were conveyed. But, in general, if the grant is made of land bounded by a stream or other body of water, a conveyance of the land will also convey all riparian rights incident to the ownership of the land.² So when an owner conveys land bounded by a stream or other body of water, without making any reservations in the deed, the law infers an intent to convey all rights under the water and in front of it; this rule is too valuable to be varied, except by clear and distinct proof of a contrary intent upon the part of the grantor.³ The rule above stated by which riparian rights pass with a grant of the

Wood v. Saunders, L. R. 10 Ch. 582; Finlison v. Porter, L. R. 10 Q. B. 188, 44 L. J. Q. B. N. S. 56, 32 L. T. N. S. 391, 23 Week. Rep. 315; United Land Co. v. Great Eastern Ry. Co., L. R. 10 Chan. 586; Collins v. Slade, 23 W. & R. 199.

¹ For riparian rights as property, see Secs. 453-455.

² Richardson v. Prentiss, 48 Mich. 88, 11 N. W. Rep. 819; Pere Marquette Boom Co. v. Adams, 44 Mich. 403, 6 N. W. Rep. 857; State etc. v. Brown, 27 N. J. L. 14; Lorman v. Benson, 8 Mich. 18, 77 Am. Dec. 435; Head v. Chesbrough, 4 Ohio N. P. 73, 6 Ohio S. & C. P. Dec. 494; Watson v. Peters, 26 Mich. 508; Brown v. Goddard, 13 R. I. 76; Turner v. Holland, 65 Mich. 453, 33 N. W. Rep. 283; Mitchell v. D'Olier, 68 N. J. L. 375, 53 Atl. Rep. 467, 59 L. R. A. 945; Bullen v. Runnels, 2 N. H. 255, 9 Am. Dec. 55.

For right to assign or convey an

easement, see Fisher v. Fair, 34 S. C. 203, 12 S. E. Rep. 470, 14 L. R. A. 333, and note; Cadwalder v. Bailey, 17 R. I. 495, 23 Atl. Rep. 20, 14 L. R. A. 300, and note.

As to exception or reservation of appurtenance, see Hagerty v. Lee, 54 N. J. L. 580, 25 Atl. Rep. 319, 20 L. R. A. 631; Bradshaw v. Duluth Imperial Mill Co., 52 Minn. 59, 53 N. W. Rep. 1066; Cox v. Howell, 108 Tenn. 130, 65 S. W. Rep. 868, 58 L. R. A. 487, and note for how far grant of mill includes water rights.

See, also, Archibald v. New York C. & H. R. Co., 157 N. Y. 574, 52 N. E. Rep. 567; St. Louis v. Rutz, 138 U. S. 226, 34 L. Ed. 941, 11 Sup. Ct. Rep. 337.

³ For the conveyance of riparian rights only, see Secs. 534, 535.

For the conveyance of water rights, see Secs. 494-1031; Bradshaw v. Duluth Imperial Mill Co., 52 Minn. 59, 53 N. W. Rep. 1066.

land, also includes accretions already formed or which may possibly be formed in the future. Accretions that are already formed are considered a part of the estate and will pass by a general grant of the land without any express mention being made of them in the deed.⁴

§ 532. **Private grants—Division of land at water's edge.**—The banks of streams and the land under the water forming, as they do, different parts of one entire estate, there is nothing to prevent the separation of the estate at the water line, so as to permit the soil under the water to be owned by one person and the upland by another. Therefore, by a deed or deeds of conveyance, an estate may be divided at the water's edge and the land adjoining the water, and the land below the water pass to different persons.¹ When such a grant is made, separating the land at the margin of the stream, it results in conferring the ownership of the water, so far as it can rest in an individual, upon the one who owns the bed of the stream, and such ownership carries certain of the riparian rights. But there are certain other riparian rights, such as the use of the water upon the adjoining land, which depend upon the adjacency of such land to the water and of which the riparian owner can not be deprived by the separation of the bottom of the stream from the upland. One of these rights is to make use of the water for domestic purposes, and another is the right of irrigating the adjoining lands.

§ 533. **Private grants—Reservation of riparian rights.**—A riparian owner may grant his land without any reservation, or in the

⁴ Bellefontaine Improvement Co. v. Nedringhaus, 181 Ill. 426, 55 N. E. Rep. 184, 72 Am. St. Rep. 269; Gorton v. Rice, 153 Mo. 676, 55 N. W. Rep. 241; Hunter v. Witt, 21 Ky. L. Rep. 35, 50 S. W. Rep. 985; Morgan v. Scott, 26 Pa. 51; East Omaha Land Co. v. Jeffries, 40 Fed. 386.

¹ Storer v. Freeman, 6 Mass. 435, 4 Am. Dec. 155; Smith v. Ford, 48 Wis. 115, 2 N. W. Rep. 134, 4 N. W. Rep. 462; Norcross v. Griffiths, 65 Wis. 599, 27 N. W. Rep. 606, 56 Am. Rep. 641;

Barker v. Bates, 13 Pick. 255, 23 Am. Dec. 678; Mayhew v. Norton, 17 Pick. 357, 28 Am. Dec. 300; People *ex rel.* Highway Commissioners v. Madison Water Co., 125 Ill. 9, 17 N. E. Rep. 147; Valentine v. Piper, 22 Pick. 85, 33 Am. Dec. 715; State v. Black River Phosphate Co., 32 Fla. 82, 13 So. Rep. 640, 21 L. R. A. 189; Watson v. Peters, 26 Mich. 508; Bradshaw v. Duluth Imperial Mill Co., 52 Minn. 59, 53 N. W. Rep. 1066.

grant he may reserve to himself any of his riparian rights. These are different parts of the same estate and may be granted as a whole or separately.¹ A riparian owner may grant the right to the use of the water, as permitted him under the common law rules, to another, or in making his deed to the entire estate he may reserve these uses to himself, and as between himself and his grantee such a deed is binding.² Such, for example, is the case of a riparian owner who reserved to himself the use of the water for a limited purpose, such as for a hydraulic ram, and the California Court held that the reservation was not lost by non-use for that purpose.³

§ 534. Private grants—Grants of riparian rights only separate and apart from the land.—Certain riparian rights may be granted separate and apart from the land to which they are naturally attached. The right of fishing and hunting comes within this class.¹ The right to cut ice and other rights to the use of the water may be either granted separately or reserved in the deeds of conveyance. The grant of the upland may be so divided that the portion granted in fact will not touch the water, in which case the grantor reserves to himself not only his riparian privileges in the use of the water, but also all accretions. Also under this rule the right of boating and gathering ice as well as the title of the soil of the grantor under the water may be granted by deed.²

¹ For the conveyance of water rights, see Chap. 53, Secs. 994-1032.

² *Ex parte* Miller, 2 Hill 418; *Bardwell v. Ames*, 39 Mass. 22 Pick. 333; *Boston Water Power Co. v. Gray*, 6 Metc. 131 (Mass.); *Kennedy v. Scoville*, 12 Conn. 317.

³ *Walker v. Lillingston*, 137 Cal. 401, 70 Pac. Rep. 282, wherein the Court said: "It is also contended that all rights under the reservation were lost by abandonment and adverse user. The fact that defendant abandoned the use of the ram and secured the benefit of the water by other means is not deemed material by the Court. The defendant's right to the use of the water did not cease when he ceased

to use the ram. Unless a contrary intention is plainly manifest, a reservation of water power for certain machinery is not to be held as fixing the manner of the use, but as fixing the measure of the quantity of water reserved."

See, also, *Yocco v. Conroy*, 104 Cal. 468, 38 Pac. Rep. 107; *Hall v. Stirling Iron R. Co.*, 148 N. Y. 432, 42 N. E. Rep. 1056; *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927.

¹ See Sec. 365.

² *Mitchell v. D'Olier*, 68 N. J. L. 375, 53 Atl. 467, 59 L. R. A. 945; *Dexter v. Jefferson Paper Co.*, 22

It is also held in the Western States, which hold to the common law of riparian rights, that, as between the parties to the grant or their successors in interest, riparian rights may be conveyed separate and apart from the land, if it is so expressly intended by the deeds of conveyance.³ But, as we shall contend, the rights granted affect only the rights of the parties to the grant and do not affect the rights of others.⁴

§ 535. Private grants—Grants of riparian rights involving the consumption of water.—In general it may be said that the use and occupancy of the water may be granted separate and apart and thus severed from the upland. There is no question upon this point where the right of use is granted for the purpose of operating power or other plants along the stream and where the water is not consumed. In such a case the grantee must exercise the rules of reasonable use, discussed in previous sections of this part,¹ taking into consideration the rights of the riparian owners below; and, as we have seen, one element of this reasonable use is to return the water to the stream before it reaches the riparian lands of those below, practically undiminished in quantity, and undeteriorated in quality, in order that they may be permitted to make a like or other use of the water to which they are entitled.² In such cases, all the parties to the grant are bound in accordance with its terms; and the other riparian owners upon the same stream, who are not injured, can not object simply upon the ground of the change of ownership of the use above. As far as all practical purposes, therefore, are concerned all parties upon the stream are bound by such a conveyance.

Again, there seems to be no question but that one riparian proprietor may grant to another riparian proprietor upon the same stream the right to the use of the water or a certain amount of the water included in the grantor's riparian rights, and even if the

Misc. 389, 50 N. Y. Sup. 557; *Bradshaw v. Duluth Imperial Mill Co.*, 52 Minn. 59, 53 N. W. Rep. 1066.

³ *Duckworth v. Watsonville etc. Co.*, 158 Cal. 206, 110 Pac. Rep. 927.

See, also, *Goodrich v. Burbank*, 12 Allen 459, 90 Am. Dec. 161; *Lonsdale etc. Co. v. Moies*, Fed. Cas. No. 8,496; *Hill v. Shorey*, 42 Vt. 614.

⁴ For which, see Sec. 535.

¹ See Sec. 492.

² *Concord Mfg. Co. v. Robertson*, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679; *Hanford v. St. Paul & D. R. Co.*, 43 Minn. 104, 42 N. W. Rep. 596, 44 N. W. Rep. 1144, 7 L. R. A. 722; *Mansfield v. Balliett*, 65 Ohio St. 451, 63 N. E. Rep. 86, 58 L. R. A. 628.

grantee consumes the water or a reasonable proportion thereof, and no one is injured by the change of ownership or the change in place of use, such a grant practically binds all the riparian owners upon the stream. It binds the parties to the grant according to its terms; and it binds the other riparian owners, because they are in no position to object to the change of ownership or the change of use.³ Again, where there is but one riparian owner, as would be the case where the entire length of the stream is upon the lands of one person, he may grant all* of the riparian rights to the use of the waters of such stream, even if by that use it is all consumed by the grantee. This is for the reason that the grantor had dominion and ownership of it. It was his property and he could dispose of it as he saw fit.⁴ Again, where all the riparian owners upon the stream join in such conveyance, no question can arise as to the use of the water by any grantor, unless such use should be reserved by him.⁵

But, upon the other hand, where a grantor grants his riparian right to the use of the water of a stream for the purpose of some use where the water is wholly or partially consumed, as, for example, would be the case for the irrigation of nonriparian lands, or to supply a municipality and its inhabitants with water, and the rights of the other riparian owners on the stream are materially and substantially injured by such a diversion and use made by the grantee, the grant, while binding between the immediate parties to the same, and their successors in interest, is not binding upon non-contracting riparian owners.⁶ Such a conveyance by one owner

³ *Rose v. Mesner*, 142 Cal. 322, 75 Pac. Rep. 905; *Fuller v. Azusa etc. Co.*, 138 Cal. 204, 71 Pac. Rep. 98; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Churchill v. Baumann*, 104 Cal. 369, 36 Pac. Rep. 93, 38 Pac. Rep. 43; *Painter v. Pasadena etc. Co.*, 91 Cal. 74, 27 Pac. Rep. 539; *Out-house-Cottel v. Berry*, 42 Ore. 593, 72 Pac. Rep. 584; *City of Salem v. Salem etc. Co.*, 12 Ore. 374, 7 Pac. Rep. 497; *Yocco v. Conroy*, 104 Cal. 468, 38 Pac. Rep. 107.

⁴ In a Scotch case decided in 1848 of *Blantyre v. Dunn*, 10 Dunlop 509, it is said: "Where a stream rises,

flows, and falls into the sea within the lands of one owner, his right of property is unaffected by any other interest, and his absolute dominion over it is uncontrolled."

⁵ See *Duckworth v. Watsonville etc. Co.*, 158 Cal. 206, 110 Pac. Rep. 927; *Fergusson v. Shireff (Scotch)*, 6 Dunlop 1374.

⁶ *Hudson v. Daley*, 156 Cal. 617, 105 Pac. Rep. 748; *Yocco v. Conroy*, 104 Cal. 468, 38 Pac. Rep. 107; *Alhambra etc. Co. v. Mayberry*, 88 Cal. 68, 25 Pac. Rep. 1101; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Duckworth v. Watsonville etc.*

will not be binding upon other riparian owners upon the same stream, unless for some reason they should be estopped from asserting their rights. In other words, one riparian owner can only grant the riparian rights to the use of the water which he himself owns, and he can grant no rights to the use of the waters of a stream which are owned by the other riparian proprietors. One of these rights, as we have seen, is that the water must continue to flow in the natural stream by the lands of the lower owners, except an amount as may be reasonable for the various uses of the upper riparian proprietors; and, after these uses, the surplus or unused water must be returned to the natural channel, in order that it may flow down to those below, who are also equally entitled to its use.⁷

In the Western States it is universally held that in a sale of water, where under the use put by the grantee it is entirely consumed, noncontracting riparian proprietors are not affected by such sale, unless for some reason they should be estopped from asserting their rights. In such a case it is held that if such noncontracting proprietors are materially and substantially injured by such use of the water by the grantee of another proprietor they have the right of action, either for injunction or for damages.⁸

Co., 158 Cal. 206, 110 Pac. Rep. 927; *Strong v. Baldwin*, 154 Cal. 150, 97 Pac. Rep. 178, 129 Am. St. Rep. 141; *Walker v. Lillingston*, 137 Cal. 401, 70 Pac. Rep. 282.

⁷ See Secs. 496, 522.

See, also, *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Gould v. Stafford*, 77 Cal. 66, 18 Pac. Rep. 879; *Yocco v. Conroy*, 104 Cal. 468, 38 Pac. Rep. 107; *Swinton Water Works Co. v. Wilts & Berks Canal Nav. Co.*, L. R. 7 H. L. 697, 45 L. Ch. N. S. 638, 33 L. T. N. S. 513, 24 Week. Rep. 284; *Lord v. Meadville Water Co.*, 135 Pa. 122, 19 Atl. Rep. 1007, 8 L. R. A. 202, 20 Am. St. Rep. 864; *City of Paterson v. East New Jersey Water Co.*, 74 N. J. Ch. 49, 70 Atl. Rep. 472; *Parry v. Citizens Water Co.*, 59 Hun 199, 13 N. Y. Sup. 471; *Stockport Water Works v. Potter*, 3

Hurlst. & C. 300, 10 Jur. N. S. 1005, 10 L. T. N. S. 748; affirmed in 7 Hurlst. C. N. 160, 31 L. J. Exch. N. S. 9, 7 Jur. N. S. 880; *McCartney v. Londonderry etc. R. Co.*, L. R. App. Cas. 1904, 301.

⁸ *Miller v. Bay City Water Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S., 772; *Logan v. Guichard*, 159 Cal. 562, 114 Pac. Rep. 989; *Duckworth v. Watsonville etc. Co.*, 150 Cal. 520, 89 Pac. Rep. 338; *Id.*, 158 Cal. 206, 110 Pac. Rep. 927; *People ex rel. Ricks etc. Co. v. Elk River Co.* 107 Cal. 221, 40 Pac. Rep. 521, 48 Am. St. Rep. 125; *Hudson County Water Co. v. McCarter*, 209 U. S. 349, 52 L. Ed. 828, 28 Sup. Ct. Rep. 529, 14 Ann. Cas. 560, affirming *Id.*, 70 N. J. Eq. 695, 65 Atl. Rep. 489, 14 L. R. A., N. S., 197, 118 Am. St. Rep. 754, 10 Am. Cas. 116; *Stoner*

As we have seen, a riparian proprietor is only entitled to a reasonable use of the water upon riparian lands. He himself can not divert and use the water upon nonriparian lands. It therefore follows that he can not sell his right to a grantee who attempts to divert and use the waters upon nonriparian lands to the injury of the other riparian proprietors upon the same stream. The same principle is followed by the California Courts in the case where one owner over an artesian or catchment basin attempts to draw off the water which underlies the lands of all the other owners, as well as his own, and sell the same for use upon distant lands to the material and substantial injury of the other owners.⁹

v. Patten, 132 Ga. 178, 63 S. E. Rep. 897; *Standon v. New Rochelle Co.*, 91 Hun 272, 36 N. Y. Sup. 92; *Paterson v. East New Jersey Water Co.*, 74 N. J. Eq. 49, 70 Atl. Rep. 472; *Crawford v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647.

See, also, *Broadmoor Dairy & L. S. Co. v. Brookside Water & Impr. Co.*, 24 Colo. 541, 52 Pac. Rep. 792, where the Court held that the preference right to the use of water for domestic purposes, given by the Colorado constitution, is the same as that of a riparian owner at common law, and therefore inseparable from riparian ownership and not subject to conveyance separate and apart from the land.

See, also, *Anaheim Water Co. v.*

Semitropic Water Co., 64 Cal. 185, 30 Pac. Rep. 623; *Montecito Water Co. v. Santa Barbara*, 144 Cal. 578, 77 Pac. Rep. 1113; *Id.*, 151 Cal. 377, 90 Pac. Rep. 935; *Los Angeles v. Pomeroy*, 124 Cal. 597, 57 Pac. Rep. 585; writ of error dismissed, 118 U. S. 314, 23 Sup. Ct. 395, 47 L. Ed. 487, 63 L. R. A. 471; *Bathgate v. Irvine*, 126 Cal. 135, 58 Pac. Rep. 442, 77 Am. St. Rep. 158; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Boehmer v. Big Rock Co.*, 117 Cal. 19, 48 Pac. Rep. 908; *Cohen v. La Canada etc. Water Co.*, 142 Cal. 437, 78 Pac. Rep. 47; *Miller v. Madera etc. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S., 391.

⁹ For rights in percolating waters, see Secs. 1193-1204.

CHAPTER 28.

VARIOUS RIPARIAN RIGHTS.

- § 536. Scope of chapter.
- § 537. Ownership of the beds of private streams.
- § 538. Accretion, reliction, and avulsion.
- § 539. Avulsion.
- § 540. The right of access to and from estate.
- § 541. Title to the beds under small lakes and ponds—English rule.
- § 542. Lakes and ponds—Title to soil in United States.
- § 543. Right to natural flow of waters—In general.
- § 544. Right to natural flow—Right to whole flow.
- § 545. Right to natural flow—Obstructing flow.
- § 546. Right to natural flow—Accelerating flow.
- § 547. Right to natural flow—Backing up water.
- § 548. Rights of riparian owner to the products of the water.
- § 549. The modern Western rule of the “undiminished flow” of streams.
- § 550. Other miscellaneous riparian rights.
- § 551. Summary and conclusions.

§ 536. **Scope of chapter.**—In this chapter we will discuss certain miscellaneous riparian rights which the owners of riparian lands have by virtue of their lands touching or bordering upon the stream or other natural source of water supply. There will be no attempt to discuss all of these rights and we will discuss only those that are pertinent and necessary to the main subject of this work.

§ 537. **Ownership of the beds of private streams.**—As we have discussed before, riparian rights do not attach to lands through the ownership of the soil over which the water flows, but through the ownership of the bank or banks adjoining the water. The ownership of the soil under the water is but one of the riparian rights which vests in the owner of the banks.¹ In public or navigable waters, as we have seen, the riparian owner may or may not, as one of his riparian rights, own the soil under the water. This depends upon the rule adopted by the State where the claim is made.² But the rule as to the title of the beds of fresh water non-navigable streams is uniform in all jurisdictions and is vested in the riparian

¹ See Secs. 451, 452, 458.

² See Secs. 325-332.

owners whose lands border upon the waters of such streams. Fresh water streams which are not a common passage way are private property, and the title to the bed of the river, *ad filum aquae*, is in the proprietors of the banks bordering upon the streams, in severalty and not in common.³ This is true whether their tenure is freehold, copyhold, or leasehold.⁴ And if the banks on both sides of the stream are owned by the same person he owns the whole of the bed, according to the extent of his lands in length. If, however, his land is bounded by the stream he owns to the thread of the same; or, as it is termed in common law, *ad filum aquae*,⁵ unless from prior grants from himself, his vendors, or the State before his land became private property, such a construction can be negatived.⁶

There is but one difference between a stream running through a man's land, and one that runs by the side of it; in the former case he owns the whole of the bed, and in the latter but half, or to

³ *Rex v. Wharton*, Holt 499, 12 Mod. 510, 88 Eng. Reprint 483; *Devonshire v. Pattinson*, L. R. 20 Q. B. Div. 263, 57 L. J. Q. B. N. S. 189, 58 L. T. N. S. 392, 52 J. P. 276; *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Hoy v. Sterritt*, 2 Watts 327; *Ball v. Slack*, 2 Wharton (Pa.) 508, 25 Cent. L. J. 539; *Hatch v. Dwight*, 17 Mass. 289, 10 Am. Dec. 145; *Mead v. Haynes*, 3 Rand 33; *Morrison v. Keene*, 3 Greenl. 474; *Middleton v. Pritchard*, 4 Ill. 510, 38 Am. Dec. 112; *Jones v. Soulard*, 65 U. S. 24 How. 41, 16 L. Ed. 604, in which the Court held that a riparian proprietor upon the Mississippi was entitled to all the accretions as far out as the middle of the stream.

See, also, *Canal Com's v. People*, 5 Wend. 423; *People v. Canal Appraisers*, 13 Wend. 355; *King v. King*, 7 Mass. 496; *Lunt v. Holland*, 14 Mass. 149; *Coovert v. O'Conner*, 8 Watts (Pa.) 470; *Holyoke Water Pr. Co. v. Lyman*, 82 U. S. 15 Wall. 500, 21 L. Ed. 133; *Stolp v. Hoyt*, 44 Ill. 219;

Berry v. Snyder, 3 Bush. 266, 96 Am. Dec. 219.

⁴ *Gould on Waters*, Sec. 46; *Tilbury v. Silva*, 45 Ch. D. 98, 62 L. T. N. S. 254.

⁵ *Ibid.* *Tyler v. Wilkinson*, 4 Mason's Cir. Ct. 397, Fed. Cas. No. 14,312; *Hay v. Sterritt*, 2 Watts 327; 2 Cooley's Blackstone 18, and note 3; *Angell on Water Courses*, Sec. 10; *Lord Hale's Treatise, De Jure Maris*. The Latin term, *ad filum aquae*, is defined by Bouvier as meaning, "to the thread of the stream; to the middle of the stream." The word thread is defined by Johnson, "a small line, anything continued in course"; *Jones v. Soulard*, 65 U. S. 24 How. 41, 16 L. Ed. 604; *Wadsworth v. Smith*, 11 Me. 278, 26 Am. Dec. 525, in which the Court said: "If a man be owner of the land on both sides of the stream or river, in common presumption he is the owner of the whole river."

⁶ *Hatch v. Dwight*, 17 Mass. 289, 10 Am. Dec. 145.

the thread of the stream.⁷ As was recently said in an Oregon case:⁸ "Though the title to the soil under navigable rivers is not involved herein, the subject has been mentioned in order to distinguish between such rights of property in those streams and in non-navigable rivers above tide waters. The middle line of the latter streams has been determined in this State to be the boundary of a riparian proprietor's land. Such, also, is the general rule."⁹ This is also the rule on public or navigable rivers in those States which have relinquished their rights to the beds of the same and permit their ownership by the riparian owners. This subject, however, has been discussed in another portion of this work.¹⁰ This is true even in those States which have abrogated the common law of riparian rights as to the use of the water.

§ 538. **Accretion, reliction, and avulsion.**—We have seen in previous sections that riparian rights have their very foundation in the contact of the lands of the riparian proprietor with the water. Regardless of the ownership of beds of the streams a lateral contact

⁷ *Starr v. Child*, 20 Wend. 149, in which Mr. Justice Cowan in construing the terms used in a deed said: "But suppose we expunge the words *to the river*, and take the shores as the boundary; the grantees become the proprietors of the shore which, when applied to a fresh water river, means the bank."

Johnson's Dictionary, *Shore and Bank*, signify the earth arising on each side of the water. *Id.*, Bank. . . . "The bank and the water are correlative. You can not own one without touching the other. But the bank is the principal object; and when the law once fixes the proprietorship of that, the soil of the river follows as an incident, or rather as a part of the subject matter, *usque filum aquae*. . . . It is true that parts of the thing may be excluded or excepted from the grant, or it may exist in separate bonds by prescription, or they may be granted by some

together with the land; but in no case *does the mere omission to mention them operate as an exclusion*." See, also, *Ex parte Jennings*, 6 Cowan 518, 16 Am. Dec. 447, and authorities cited.

⁸ *Micelli v. Andrus*, — Ore. —, 120 Pac. Rep. 737.

⁹ Citing *Shaw v. Oswego Iron Co.*, 10 Ore. 371, 45 Am. Rep. 146; *Hanlon v. Hobson*, 24 Colo. 284, 51 Pac. Rep. 433, 42 L. R. A. 502.

¹⁰ For ownership of the beds of fresh water navigable streams, see Secs. 328-332.

See, also, *Johnson v. Johnson*, 14 Idaho 561, 95 Pac. Rep. 499, 24 L. R. A., N. S., 1240; *Lattig v. Scott*, 17 Idaho 506, 107 Pac. Rep. 47; *Fischer v. Davis*, 19 Idaho 493, 116 Pac. Rep. 412; *Drake v. Russian River Co.*, 10 Cal. App. 654, 103 Pac. Rep. 167; *Foss v. Johnstone*, 158 Cal. 119, 110 Pac. Rep. 294.

is all that is necessary.¹ If the boundary line of the owner was fixed on a particular meander line, at a certain time when the water was in actual contact with his land, and was immovable from that line, it would often happen that the owner's land would be left high and dry and separated from the stream by a strip of land of a greater or less width, and he would lose all of his riparian rights for the reason that the contact of his land with the water no longer existed.

This loss of contact of a certain line with the water results from one of three causes: First, accretion, or the gradual and imperceptible addition to the land by the deposit of silt and sediment along the edge of the water, so that the land is extended into the water. Second, reliction, or the gradual withdrawal of the water from the land, by the lowering of its surface level from any cause. Third, avulsion, by which a large quantity of land is suddenly added to the shore by some freak of the stream in severing it bodily from its former location. The contact of the owner's land must continue to exist in order for him to hold his riparian rights. The question is well settled at common law that the person whose land is bounded by a stream of water which changes its course gradually, by alluvial formations, or the water of which gradually receded, shall still hold the same boundary upon the stream, including accumulated soil; this is so without regard to the question whether such accumulations or relictions were formed wholly by natural causes or by such causes influenced by the artificial works of others, and also without regard to the questions whether such stream is navigable or nonnavigable, private or public.² Upon the other

¹ See Sec. 458.

² Angell on Water Courses, Secs. 53-57; Gould on Waters, Secs. 155-159; 2 Black. Com. 262; Rex v. Yardborough, 3 B. & C. 91, 5 Bing. 163, 2 Bligh. N. S. 147, 4 Eng. Reprint 1087; New Orleans v. United States, 35 U. S. 10 Pet. 662, 9 L. Ed. 573; Jones v. Soulard, 65 U. S. 24 How. 41, 16 L. Ed. 604; Saulett v. Shepherd, 71 U. S. 4 Wall. 502, 18 L. Ed. 442; St. Louis. Pub. Schools v. Riskey, 77 U. S. 10 Wall. 91, 19 L. Ed. 850; Jones v. Johnson, 59 U. S. 18

How. 150, 15 L. Ed. 320; Handly v. Anthony, 18 U. S. 5 Wheat. 374, 5 L. Ed. 113; Barney v. Keokuk, 94 U. S. 324, 24 L. Ed. 224; Jefferis v. East Omaha L. Co., 134 U. S. 178, 33 L. Ed. 872, 10 Sup. Ct. Rep. 518; County of St. Clair v. Lovington, 90 U. S. 23 Wall. 46, 23 L. Ed. 59, 10 Sup. Ct. Rep. 518; Fowler v. Wood, 73 Kan. 511, 85 Pac. Rep. 763, 6 L. R. A., N. S., 162, 117 Am. St. Rep. 534; McBride v. Seinwenden, 72 Kan. 508, 83 Pac. Rep. 822; Lammers v. Nissen, 4 Neb. 245; affirmed, 154 U.

hand, the right to accretions depends upon the original actual contiguity of the owner's land with the stream, and any separation, however slight, of his land from the accretion by the land of another defeats his claim. As was laid down in the case of *Bates v. Ill. Cent. R. Co.*,³ "Before a proprietor can set up his claim to accretions and the like he must first show that he owns the shores; and if he fail to establish his ownership, judicial inquiries respecting his rights in or under the waters adjoining are abstractions and useless."⁴

An accretion or reliction, to vest a title in the owner of the land abutting upon the stream, must be so slow that its increase should be imperceptible, or, as some courts hold, so gradual that no one can judge how much is added from time to time.⁵ However, a riparian owner can have no vested right to future accretions.⁶ If

S. 650, appendix 14 Sup. Ct. 1189, 25 L. Ed. 562; *Hammond v. Shepard*, 186 Ill. 235, 57 N. E. Rep. 867, 78 Am. St. Rep. 274; *Diedrich v. Northwestern R. Co.*, 42 Wis. 248, 24 Am. Rep. 399; *Buse v. Russell*, 86 Mo. 209; *Hathaway v. Milwaukee*, 132 Wis. 249, 111 N. W. Rep. 570, 112 N. W. Rep. 455, 9 L. R. A., N. S., 778, 122 Am. St. Rep. 975; *Rutz v. Seeger*, 35 Fed. Rep. 188; *Perry v. Pratt*, 31 Conn. 442; *Gerris v. Clough*, 48 N. H. 9; *Ingraham v. Wilkinson*, 4 Pick. 268; *Witmore v. Atlantic White Lead Co.*, 37 Barb. 70; *Hopkins Academy v. Dickinson*, 9 Cush. 544; *Halsey v. McCormick*, 18 N. Y. 147.

³ 66 U. S. 1 Black 204, 17 L. Ed. 158.

⁴ See, also, *Re State Reservation Comrs.*, 37 Hun 537; *Sanlett v. Shepherd*, 71 U. S. 4 Wall. 502, 18 L. Ed. 442; *Bristol v. Carroll Co.*, 95 Ill. 84; *Peauford v. Duncan*, 1 Jones N. Y. 234; *Posey v. Jones*, 7 Lea (Tenn.) 98.

⁵ *Lammers v. Nissen*, 4 Neb. 245; affirmed, 154 U. S. 650, Appendix 14 Sup. Ct. 1189, 25 L. Ed. 562; *Saunders v. New York etc. R. Co.*, 144 N. Y. 75, 38 N. E. Rep. 992, 26 L. R. A.

378, 43 Am. St. Rep. 729; *Warren v. Chambers*, 25 Ark. 120, 91 Am. Dec. 538, 4 Am. Rep. 23.

See, also, cases cited above. *Angell on Water Courses*, Sec. 53; *Halsey v. McCormick*, 18 N. Y. 147; *Emans v. Turnbull*, 2 Johns. (N. Y.) 313, 3 Am. Dec. 427; *Mulry v. Norton*, 100 N. Y. 424, 3 N. E. Rep. 581, 53 Am. Rep. 206; *Cook v. McClure*, 58 N. Y. 437, 17 Am. St. Rep. 270; *Lovington v. St. Clair*, 64 Ill. 56, 16 Am. Rep. 516; *Id.*, 18 Wall. 628 U. S., 21 L. Ed. 813, 23 Wall. 46, 23 L. Ed. 59.

The legal meaning of the word "imperceptible" seems to have been settled in the case of *King v. Lord Yardborough*, 3 B. & Cress. 91, S. C. 10 Eng. Com. Law 19; affirmed in the H. L. 2 Bigh. N. S. 147, 1 Dow. J. C. 176. That there is no distinction in this respect between soil gained by accretions and that uncovered by relictions, see *Handly v. Anthony*, 18 U. S. 5 Wheat. 374, 5 L. Ed. 113; *Boorman v. Sunnuchs*, 42 Wis. 233; *Linthicum v. Coan*, 64 Md. 439, 53 Am. Rep. 210.

⁶ *Cohen v. United States*, 162 Fed. Rep. 364.

the addition to the land is sudden and considerable it belongs to the sovereign or State,⁷ where the State was the original owner; but in those States, where the riparian owner was also the owner of the bed of the stream, it remains in him.⁸ And, conversely, every proprietor whose land is thus bounded by a stream is subject to loss by the same means which may add to his territory; and as he is without remedy for his loss in this way he can not be held accountable for his gain.⁹ These principles have been sustained throughout the Western States, where the common law principles have been for the most part modified. No other rules than these can be applied on just principles, and their effect is that where a person's lands actually border upon the stream and his riparian rights have once accrued by virtue of the ownership in the lands so situated none of those rights can be lost by the gradual formation of new soil upon the margin of the water, caused by the action of the tides or current. Were this otherwise the whole system of riparian rights would be overthrown and the riparian owners whose estates derive a greater part of their value from the very fact that they border upon a water course would suffer hardship and injustice by being deprived of all the rights belonging to them by virtue of their situation through the action of the tides or current working up a line of alluvion in front of their premises.¹⁰

Therefore, in the Western States, even those which have rejected the common law of riparian rights as to the use of the water flowing

⁷ *Benson v. Morrow*, 61 Mo. 345; *Bla. Com.* 261, 262; *Emans v. Turnbull*, 2 Johns. (N. Y.) 313, 3 Am. Dec. 427; *Angell on Water Courses*, Secs. 57, 59; *Woodbury v. Short*, 17 Vt. 386, 44 Am. Dec. 344.

⁸ *Dikes v. Miller*, 24 Tex. 417; *Fuller v. Shedd*, 161 Ill. 462, 44 N. E. Rep. 286, 33 L. R. A. 146, 52 Am. St. Rep. 380; *Mulry v. Norton*, 100 N. Y. 424, 3 N. E. Rep. 581, 53 Am. Rep. 206.

⁹ *Mayor of New Orleans v. United States*, 10 Peters 661, 9 L. Ed. 573; *In re Hull & Selby R. Co.*, 5 M. & W. 327; *Foster v. Wright*, 4 C. P. D. 438, 49 L. J. C. P. N. S. 97, 44 J. P.

7; *Wilson v. Shivley*, 11 Ore. 215, 4 Pac. Rep. 324; *County of St. Clair v. Lovington*, 23 Wall. 46; *Chapman v. Hoskins*, 2 Md. Ch. Dec. 485; *Giraud Lessee v. Hughes*, 1 Gill & J. 249 (Md.); *Berry v. Snyder*, 3 Bush. 266 (Ky.), 96 Am. Dec. 219; *Smith v. Public Schools*, 30 Mo. 290; *Stevens v. Patterson R. Co.*, 34 N. J. L. 532, 3 Am. Rep. 269; *Betchel v. Edgewater*, 45 Hun 240.

¹⁰ *Deerfield v. Arms*, 17 Pick. (Mass.) 41, 28 Am. Dec. 276; *Cambre v. Kohn*, 8 N. S. (La.) 572; *Wilson v. Shivley*, 11 Ore. 215, 4 Pac. Rep. 324.

in streams in favor of the Arid Region Doctrine of appropriation, the common law riparian right of accretion remains so long as the stream has not been diverted by any appropriator.¹¹ The doctrine, therefore, may be regarded as well settled in this country that when lands border on rivers and streams and the banks are changed by that gradual and imperceptible process known as "accretion," the boundaries of the riparian proprietor still remain at the river, although, as a consequence of such change in the shore line, the area of the possession may be changed, as was said by the Circuit Court of Appeals: "A boundary on a river implies a boundary changing as the shore line changes by accretion or erosion in the absence of definite intention to the contrary."¹²

§ 539. **Avulsion.**—Avulsion is where, by some sudden freak the stream breaks through its banks and forms another channel, or cuts off a large quantity of land from one owner and adds it to the bank of another. As was held in a recent Kansas case, to constitute avulsion the bank of the stream must be destroyed or removed suddenly, visibly, rapidly, violently, in a substantial quantity, and in a manner unusual to that particular river; and to constitute avulsion it was not essential to be torn away or be removed intact so as to be capable of location or identification.¹ Avulsion is different from accretion in this: Accretion is through imperceptible changes, while avulsion is sudden and may come in a single day. It follows, therefore, that riparian rights may be lost by the sudden change made in the channel of the stream

¹¹ *Hutchinson v. Watson Slough Ditch Co.*, 16 Idaho 484, 101 Pac. Rep. 1059, 133 Am. St. Rep. 125; *Hartman v. Tresise*, 36 Colo. 146, 84 Pac. Rep. 685, 4 L. R. A., N. S. 872; *Sternberger v. Seaton etc. Co.*, 45 Colo. 401, 102 Pac. Rep. 168; *Kinthead v. Turgeon*, 74 Neb. 575, 104 N. W. Rep. 1061, 1 L. R. A., N. S., 762, 109 N. W. Rep. 744, 7 L. R. A., N. S., 316, 13 Am. & Eng. Ann. Cas. 43; *Western Pacific R. Co. v. Southern Pacific R. Co.*, 151 Fed. 376, 80 C. C. A. 606; *Judson v. Tidewater Lumber Co.*, 51

Wash. 164, 98 Pac. Rep. 377; *Ami Co. v. Tidewater Lumber Co.*, 51 Wash. 171, 98 Pac. Rep. 380; *Stockley v. Sissna*, 119 Fed. 822, 56 C. C. A. 324.

¹² *Stockley v. Sissna*, 119 Fed. 822, 56 C. C. A. 324.

See, also, *Johnson v. Johnson*, 14 Idaho 561, 95 Pac. Rep. 499, 24 L. R. A., N. S., 1240; *Lattig v. Scott*, 17 Idaho 506, 107 Pac. Rep. 47.

¹ *Wood v. McAlpine*, 85 Kan. 657, 118 Pac. Rep. 1060.

through avulsion.² Where avulsion occurs the former riparian owner has no right to ditch the stream back to its former water course; and, as said by the California Court: "The foundation of a riparian proprietor's right rests upon the universally accepted maxim, adopted by the common law from the civil law, *Aqua currit et debet currere ut currere solebat ex jure naturae*. These rights thus draw their support from the laws of Nature, but they do not rise superior to those laws. When, by their operation, the flow is lost the right is lost with it. The new channel itself becomes the natural channel. Otherwise a riparian proprietor would hold all lands above him in extraordinary and perpetual servitude. If, by the forces of Nature, the stream should change its course at a point miles above him, he would still be empowered to subject any and all of the intermediate territory to operations requisite to enable him to turn the water back upon his own premises, and this power would be his to the very foundation head of the stream. Such a doctrine could not be tolerated."³ However, a riparian owner has the right to take all necessary steps in strengthening the banks of the stream against sudden changes by freshets and washouts provided that he can do so without trespassing upon the land of another.⁴ If the change is gradual instead of sudden the riparian owner's right of access to the stream is not lost under the rule of accretion.⁵ Therefore he retains all of his riparian rights.

§ 540. The right of access to and from estate.—As discussed in previous sections, land in order to be riparian must actually touch or border upon the stream or other natural body of water.¹ It therefore follows that in order to continue its riparian character this condition must also continue. In other words, there must

² Fowler v. Wood, 73 Kan. 511, 85 Pac. Rep. 763, 6 L. R. A., N. S., 162, 117 Am. St. Rep. 534; Missouri v. Nebraska, 196 U. S. 23, 49 L. Ed. 372, 25 Sup. Ct. Rep. 155.

³ Wholey v. Caldwell, 108 Cal. 95, 41 Pac. Rep. 31, 30 L. R. A. 820, 49 Am. St. Rep. 64.

See, also, Page v. Rocky Ford etc. Co., 83 Cal. 84, 21 Pac. Rep. 1102, 23 Pac. Rep. 875. But see York County v. Rolls, 27 Ont. App. 72;

Morton v. Oregon R. Co., 48 Ore. 444, 87 Pac. Rep. 151, 1046, 7 L. R. A., N. S., 344, 120 Am. St. Rep. 827.

⁴ Cox v. Bernard, 39 Ore. 53, 64 Pac. Rep. 860; Wholey v. Caldwell, 108 Cal. 95, 41 Pac. Rep. 31, 30 L. R. A. 820, 49 Am. St. Rep. 64.

⁵ See Sec. 538.

¹ For the nature of riparian rights, see Secs. 450-456.

For what are riparian lands, see Secs. 457-466.

always be a direct access from the land to the stream. Any intervening right between such lands and the water's edge cuts off the riparian rights from such lands and they are no longer considered as riparian.² And we have also seen that in order to maintain this continuity of access it is the rule that all accretions formed at the edge of the water also belong to the riparian owner.³ Therefore, although the locality of the line of access may be changed, it is always there, even if the stream recedes to a considerable distance, and adds a considerable area to the land of the riparian proprietor. If the access to the stream is lost, through any legal means, the lands are no longer riparian; and, conversely, the riparian owner is always given the right of access to and from his estate and the water, by virtue of the fact of his lands touching upon the stream. This right of access is, therefore, one of the most important of riparian rights, and the one upon which all of the other riparian rights depend. It not only applies to non-navigable but to navigable streams and water courses, and also to all other natural bodies of water, to which riparian rights may attach.⁴

The right of access to enter from one's own estate upon a water course which runs by the same, and to pass from the water course back to the estate, exists only in the riparian owner of such estate. Having alone this exclusive right of access, the riparian proprietor only has the exclusive right to all uses of the water permitted under the common law.⁵ This right is exclusive in the proprietor and extends to all portions of his domain fronting on the water, whether it is ever used by him or not, as long as it has not been lost by adverse possession by another.⁶ Any interruption of it is an encroachment upon a private right, whether caused by a public or private nuisance, or authorized by legislative enactment, unless

² See Sec. 461.

³ For Accretions, see Sec. 538.

⁴ To what waters riparian rights attach, see Chap. 22, Secs. 457-466.

See, also, Secs. 335, 336, 344, 365.

That the owner of land bounded by a navigable river has the right of access between his premises and the navigable channel of the river, see *Yates v. Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984; *Case v. Loftus*, 39 Fed. Rep. 730, 5 L. R. A. 684; *Hedges v.*

West Shore R. Co., 80 Hun 310, 30 N. Y. Supp. 92; *Paine Lumber Co. v. United States*, 55 Fed. Rep. 854.

⁵ For the right of access for the use of water in the Western States, see Secs. 671-677.

See, also, for the right of access to and from navigable waters, Secs. 335, 336, 344.

⁶ For loss of riparian rights by prescription, see Secs. 1039-1041.

proper condemnation proceedings have been had for it, and upon the payment of just compensation.⁷ This riparian right of access is property and is valuable, and the owner can not, directly or indirectly, be deprived of it except by a constitutional exercise of the power of the State to appropriate private property for a public use.⁸ The right exists by virtue of his riparian ownership, and is entirely different from the public right of navigation and of passing and repassing along the highway of the river.⁹ Upon the other hand the riparian owner has the exclusive right to make a landing, wharf, or pier from his own land out into the stream, provided that

⁷ *Yates v. Milwaukee*, 77 U. S. 10 Wall. 497, 19 L. Ed. 984; *Bowman v. Walthen*, 2 McLean 376, Fed. Cas. No. 1,740; *Wilkes v. Hungerford Market Co.*, 2 Bing. N. R. 281; *Rex v. Russell*, 6 B. & C. 566, 108 Eng. Reprint 560; *Lyon v. Fishmongers' Co.*, L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1; *Yarmouth v. Simmons*, L. R. 10 Ch. D. 518, 47 J. L. Ch. N. S. 792, 38 L. T. N. S. 881, 26 Week. Rep. 802; *Bell v. Quebec*, L. R. 5 App. Cas. 84, 49 L. J. P. C. N. S. 1, 41 L. T. N. S. 451; *Brown v. Gagy*, 10 Jur. N. S. 525, 2 Moore P. C. N. S. 341, 10 L. T. N. S. 45, 12 Week. Rep. 492; *Dutton v. Strong*, 66 U. S. 1 Black 25, 17 L. Ed. 29; *Schurmeir v. St. Paul etc. R. Co.*, 74 U. S. 7 Wall. 272, 19 L. Ed. 74; *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *Farist Steel Co. v. Bridgeport*, 60 Conn. 278, 22 Atl. Rep. 561, 13 L. R. A. 590; *Fuller v. Shedd*, 161 Ill. 462, 44 N. E. Rep. 286, 33 L. R. A. 146, 52 Am. St. Rep. 380; *Payne v. English*, 79 Cal. 540, 21 Pac. Rep. 952; *Priewe v. Wisconsin St. Land & Imp. Co.*, 93 Wis. 534, 67 N. W. Rep. 918, 33 L. R. A. 645; *Pion v. North Shore R. Co.*, 14 Can. S. C. 677, affirming 12 Quebec L. R. 205, and affirmed in 14 App. Cas. 612; *Lamprey v.*

State, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *Carli v. Stillwater St. R. & Trans. Co.*, 28 Minn. 373, 10 N. W. Rep. 205, 41 Am. Rep. 290; *Concord Mfg. Co. v. Robertson*, 66 N. H. 1, 25 Atl. Rep. 718, 18 L. R. A. 679; *Shirley v. Bishop*, 67 Cal. 543, 8 Pac. Rep. 82.
⁸ For Eminent Domain, see Secs. 1059-1098.

See, also, *Van Dolsen v. New York*, 21 Blatch. 454, 17 Fed. Rep. 817; *Yates v. Judd*, 18 Wis. 118; *Lewis v. Johnson*, 76 Fed. Rep. 476; *Weber v. State Harbor Comrs.*, 85 U. S. 18 Wall. 57, 21 L. Ed. 798; *Folsom v. Freeborn*, 13 R. I. 200; *Meyers v. St. Louis*, 8 Mo. App. 266, 82 Mo. 367; *Morrill v. St. Anthony Falls Co.*, 26 Minn. 222, 2 N. W. Rep. 842, 37 Am. Rep. 399.

⁹ For right of navigation, see Chap. 16, Secs. 341-357.

See, also, *Attorney General v. Conservators of the Thames*, 1 H. & M. 1; *Lyon v. Fishmongers' Co.*, 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1; *Bell v. Quebec*, 5 App. Cas. 84, 49 L. J. P. C. N. S. 1, 41 L. T. N. S. 451; *Brown v. Gagy*, 10 Jur. N. S. 525, 2 Moore P. C. N. S. 341, 10 L. T. N. S. 45, 12 Week. Rep. 492; *Benjamin v. Storr*, L. R. 9 C. P. 400; *Fitz v. Hobson*, 28 R. W. 459.

he does not interfere with the general right of the public to navigation upon the stream.¹⁰

There have been many attempts to deprive the riparian owners of this right of access. But the courts have almost universally held that this right was a property right and of value and held by as sacred a tenure by the riparian owner as he holds the land from which it emanates, and hence he can not be deprived of it except by due process of the law of eminent domain, and then only upon just compensation.¹¹ Wharves or piers can not be erected in such a way as to interfere with the owner's right of access either by the public or by private individuals;¹² nor any other structures, such as embankments.¹³ Nor can logs be boomed so as to cut off the access.¹⁴ The access can not be destroyed by changing the level of the water,¹⁵ nor by changing the channel of the stream.¹⁶

As we have seen in a previous section, the right of access in the majority of the States can not be taken away from the riparian proprietor, without compensation, even for the improvement of navigation.¹⁷ As far as the Federal Courts are concerned, it is left

¹⁰ Dutton v. Strong, 66 U. S. 1 Black 23, 17 L. Ed. 29; Schurmeir v. St. Paul etc. R. Co., 74 U. S. 7 Wall. 272, 19 L. Ed. 74.

¹¹ See cases cited above.

¹² Gordon v. Winston, 181 Ill. 338, 54 N. E. Rep. 1095; Shirley v. Bishop, 67 Cal. 543, 8 Pac. Rep. 82.

¹³ Bedlow v. New York Floating Dry Dock Co., 112 N. Y. 263, 19 N. E. Rep. 800, 2 L. R. A. 629; Case v. Loftus, 14 Sawy. 213, 39 Fed. Rep. 720, 5 L. R. A. 684; Bell v. Hull etc. R. Co., 6 Mees. & W. 699, 2 Ry. Cas. 279, 9 L. J. Exch. 213; Buccleuch v. Metropolitan Board of Works, L. R. 3 Exch. 306; Attorney General v. Conservators of the Thames, 1 Hem. & M. 1, 8 Jur. N. S. 1203, 11 Week. Rep. 163, 71 Eng. Reprint 1; Metropolitan Board of Works v. McCarthy, L. R. 7 H. L. 243, 43 L. J. C. P., N. S. 385, 31 L. T. N. S. 132; Bell v. Quebec, L. R. 5 App. Cas. 84, 49 L. J. P. C. N. S. 1, 41 L. J. N. S. 451.

¹⁴ French v. Conn. R. Lum. Co., 145 Mass. 261, 14 N. E. Rep. 113; Shepard v. Coeur d'Alene etc. Co., 16 Idaho 293, 101 Pac. Rep. 591; Smart v. Aroostook Lumber Co., 103 Me. 37, 68 Atl. Rep. 527, 14 L. R. A., N. S., 1083; Hulet v. Wishkah Boom Co., 54 Wash. 510, 103 Pac. Rep. 814, 132 Am. St. Rep. 1127.

See, also, for actions for injunctions and damages for obstructing access, Chaps. 81, 83.

¹⁵ Webster v. Harris, 111 Tenn. 668, 69 S. W. Rep. 782, 59 L. R. A. 324; State v. Sunapee Dam Co., 70 N. H. 458, 50 Atl. Rep. 108, 59 L. R. A. 55.

¹⁶ Avery v. Fox, 1 Abb. U. S. 246, Fed. Cas. No. 674.

But see Homochitto River v. Withers, 29 Miss. 21, 64 Am. Dec. 126; affirmed, 20 How. 84 U. S., 15 L. Ed. 816.

¹⁷ See Secs. 335, 336, 345.

to the laws and decisions of the respective States to determine the rule in this respect. This subject, however, has been discussed in another portion of this work relating to public waters and navigation.

§ 541. Title to the beds under small lakes and ponds—English rule.—The early English authorities are indefinite respecting property in land covered by lakes and ponds. As to riparian rights, it was first regarded as not necessary to determine whether the soil of lakes and ponds, like that of fresh water rivers, *prima facie* belongs to the owners of the land or of the manors on either side, *ad medium flum aquae*, or whether it belongs *prima facie* to the King, by right of his prerogative. But later it was laid down¹ in the House of Lords, in the case of *Bristow v. Cormican*, that the Crown has no *de jure* right to the soil or fisheries of an inland non-tidal lake, which rule has been followed by other decisions. So the law of England is settled that the Crown and the public have no such rights in fresh water lakes as they possess in water courses subject to the ebb and flow of the tide; that the owners of the land bordering upon the lake or pond are the owners of the soil and the fisheries in them, and that the public have no greater privileges in them than in fresh water rivers.²

¹ *Marshall v. Ulleswater Steam Nav. Co.*, 3 Best. & S. 732; Com. Dig. Prerogative (D. 50); Hale, *De Jure Maris*, Chap. 1; *Devonshire v. Pattinson*, 2 Q. B. D. 263; *Perry v. Thornton*, 23 L. R. Ir. 402; Hunt on Boundaries and Fences, 19; Grey's Case, Owen, 20; *Pollenfen v. Crispin*, 1 Vent. 122; Bell's Law of Scotland, 171.

See, also, for rights of public to beds of lakes and ponds, Sec. 327.

² *Bristow v. Cormican*, L. R. 3 App. Cas. 641, S. C. Ir. 10 C. L. 398, 2 L. R. Ir. 118. In this case Lord Cairns, who was then Lord Chancellor, said: "The Crown has no *de jure* right to the soil or fisheries of a lough like Lough Neagh. Lough Neagh is, as your Lordships are aware, the longest

inland lake in the United Kingdom, and one of the largest in Europe. It is from fourteen to sixteen miles long and from six to eight miles broad. It contains nearly one hundred thousand acres; but though it is so large, I am not aware of any rule which would *prima facie* connect the soil or the fisheries with the Crown, or disconnect them from the private ownership, either of riparian proprietors or other persons." Lord Blackburn said: "It is clearly and uniformly laid down in our books, that where the soil is covered by the water forming a river in which the tide does not flow, the soil does of common right belong to the owners of the adjoining land; and there is no case, or book of authority, to show that the Crown is of common

§ 542. **Lakes and ponds—Title to soil in United States.**—In the United States, as we have seen in previous sections,¹ our great navigable lakes are regarded as public property, and are not susceptible of private ownership any more than the sea. But upon these bodies of water the riparian owner's title extends to the edge of the water at low water mark, and grants bounded by such waters extend to that line.² But upon the other hand, in this country a lake or pond too small to be really useful for navigation, although of considerable size as compared with other fresh water streams, may be private property, and as such is subject to the common law rules as to fresh water streams respecting the ownership of the soil under them.³ This rule, however, varies, especially in the

right entitled to land covered by water where the water is not running water forming a river, but still water forming a lake. . . . It is, however, necessary to decide whether the Crown has of common right a *prima facie* title to the soil of a lake; I think it has not. I know of no authority for saying it has, and I see no reason why it should be."

See cases cited above as to the right of the public to navigate upon lakes. See *Marshall v. Ulleswater Steam Nav. Co.*, 3 B. & S. 732, L. R. 7 Q. B. 166; *Bloomfield v. Johnson, Jr.* R. 8 C. L. 68; *Bristow v. Cormican*, 3 App. Cas. 641, S. C. Ir. R. 10 C. L. 398, 2 L. R. Ir. 118; *Mackenzie v. Banker*, 3 App. Cas. 1324.

¹ See Secs. 327-330.

² *Champlain R. Co. v. Valentine*, 19 Barb. 484; *Trustees v. Dennett*, 9 N. Y. 669; *Fletcher v. Phelps*, 28 Vt. 257; *Jakeway v. Barrett*, 38 Vt. 316; *Austin v. Rutland R. Co.*, 45 Vt. 215, 21 Blatchf. 358, 17 Fed. Rep. 466; *Canal Comrs v. People*, 5 Wend. 423; *Wheeler v. Spinola*, 54 N. Y. 377; *People v. Jones*, 112 N. Y. 597; *Mariner v. Schulte*, 13 Wis. 682; *Wood v. Kelly*, 30 Me. 47; *Waterman v. Johnson*, 13 Pick. 261; *Ladd v. Os-*

born, 79 Iowa 93, 44 N. W. Rep. 235; *Hardin v. Jordan*, 16 Fed. Rep. 823; 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838, in which the Court held that by the common law, under a grant of lands bounded by a lake or pond which is not tide water and is not navigable, the grantee takes to the center of the pond or lake, ratable with other riparian proprietors, if there be such; and this rule prevailed in Illinois when the patent to the plaintiff's ancestor was granted in 1841, and is still the law of that State.

For the ownership of the beds of great lakes and ponds, See Secs. 327-330.

See, also, *Illinois Cent. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110.

³ *Ledyard v. Ten Eyck*, 36 Barb. 102; *Gouverneur v. National Ice Co.*, 134 N. Y. 355, 31 N. E. Rep. 865, 18 L. R. A. 695, 30 Am. St. Rep. 669, 57 Hun 474, 11 N. Y. Sup. 87; *Atwater v. Canandagua*, 56 Hun 293; *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *Cobb v. Davenport*, 32 N. J. L. 369, 380, 33 N. J. L. 223, 97 Am. Dec. 718.

See, also, *Scheifert v. Briegel*, 90 Minn. 125, 96 N. W. Rep. 44, 63 L. R.

Eastern States.⁴ But in the Western States it is held that the owners of land bordering upon non-navigable lakes and ponds situated within the original Government surveys own the beds of the lakes to the center, as in the case of non-navigable fresh water streams.⁵ But if the lakes are large and navigable they are public property, and the riparian owners take only to the water's edge.⁶ This right of title to the beds of lakes is, like the title to the beds of fresh water streams, based upon the actual contact of the riparian owner's land with the edge of the water of the lake, and with this

A. 296; *Hardin v. Jordan*, 140 U. S. 371, 35 L. Ed. 428, 11 Sup. Ct. Rep. 808, 838; 16 Fed. Rep. 823; *Lamprey v. State*, 52 Minn. 181, 53 N. W. Rep. 1139, 18 L. R. A. 670, 38 Am. St. Rep. 541; *French-Glenn Live Stock Co. v. Springer*, 35 Ore. 312, 58 Pac. Rep. 102; 185 U. S. 47, 46 L. Ed. 800, 22 Sup. Ct. Rep. 563; *Security Land & Ex. Co. v. Burns*, 87 Minn. 97, 91 N. W. Rep. 304, 94 Am. St. Rep. 684; *Hanson v. Rice*, 88 Minn. 273, 92 N. W. Rep. 982; *Shell v. Matteson*, 81 Minn. 38, 83 N. W. Rep. 491.

⁴ In New York it is held that an inland lake five miles long and three-quarters of a mile wide, which has no important inlet and does not form a part of a chain of connecting waters, is subject to the common law rule as to fresh water streams. *Ledyard v. Ten Eyck*, 36 Barb. 102.

As for the rule in Massachusetts, see *Commonwealth v. Alger*, 7 Cush. 53; *West Roxbury v. Stoddard*, 7 Allen 158; *Commonwealth v. Tiffany*, 119 Mass. 300; *Tudor v. Cambridge W. Works*, 1 Allen 164; *Commonwealth v. Vincent*, 108 Mass. 441; *Fay v. Salem Aqueduct Co.*, 111 Mass. 27; *Gould on Waters*, Sec. 84.

In Massachusetts, ponds of more than twenty acres in area are called great ponds, and as such are owned by the State, as public property held in trust for public use. *Watuppa Reser-*

voir Co. v. Fall River et al., 147 Mass. 48, 18 N. E. Rep. 465, 1 L. R. A. 466; *Commonwealth v. Tiffany*, 119 Mass. 300, 12 Am. & Eng. Ency. of Law 634.

Brastow v. Rockport Ice Co., 77 Me. 100, in which the Court held that, in that State, all ponds containing more than ten acres are public ponds, and the right to cut ice upon them is a public right, free to all. In this particular the owners of the shore have no greater right than other persons who can reach the pond without trespassing upon the lands of others. *Clement v. Burns*, 43 N. H. 609.

⁵ For title to the beds of fresh water streams, see Sec. 537.

See cases cited *supra*. *Ridgeway v. Ludlow*, 58 Ind. 248; *Edwards v. Ogle*, 76 Ind. 392; *Stoner v. Rice*, 121 Ind. 51, 22 N. E. Rep. 968, 6 L. R. A. 387; *Forsyth v. Smale*, 7 Biss. 201, Fed. Cas. No. 4,950.

See, also, *Nye v. Andrews*, 47 Ohio St. 336, 8 L. R. A. 578; *Delaplaine v. Chicago R. Co.*, 42 Wis. 214, 24 Am. Rep. 386; *Boorman v. Sunnuchs*, 42 Wis. 233; *Deidrich v. North Western R. Co.*, 42 Wis. 248, 47 Wis. 662; *Olson v. Merrill*, 42 Wis. 203; *Wright v. Day*, 33 Wis. 260.

Michigan.—*Clute v. Fisher*, 65 Mich. 48.

⁶ See Secs. 327-330.

contact he is entitled to all of the riparian rights to which an owner is entitled upon the fresh water streams.⁷

§ 543. **Right to natural flow of the water—In general.**—The right to a water course, under the theories of the common law, begins *ex jure naturae*, and, having taken a certain course naturally, it can not be diverted or so used by one proprietor, to the deprivation of the rights of the other riparian owners on the same stream or other body of water. *Aqua currit et debet currere, ut currere solebat*, is the language of the ancient common law.¹ The more modern general principle is, that every owner of land, through which a natural stream flows, has a usufruct in the water of the stream as it passes along, and has an equal right with those above and below him to the natural flow of the water in its accustomed channel, at its usual level, without unreasonable detention or substantial diminution in quantity or quality, and that none of the owners can make any use of it prejudicial to the rights of the other owners, unless he has acquired a right to do so by license, grant, or prescription. And this is so whether the water is navigable or non-navigable, so long as the use does not interfere with the navigation.² Or, as the rule is laid down by Mr. Justice Story, but upon

⁷ For riparian rights on lakes, see Secs. 474, 475.

¹ Angell on Water Courses, Sec. 93; 3 Kent. Com. 439; Blanchard v. Baker, 8 Greenl. (Me.) 253, 23 Am. Dec. 504; Weiss v. Oregon Iron & Steel Co., 13 Ore. 496, 11 Pac. Rep. 255; Bealey v. Shaw, 6 East. 208, 2 Smith 321, 102 Eng. Reprint 1266; Pope v. Kinman, 54 Cal. 3.

² Heath v. Williams, 25 Me. 209, 43 Am. Dec. 265. As to the alteration of the character of waters, see Pollution of Waters, Chap. 58, Secs. 1129-1147.

See, also, Tyler v. Wilkinson, 4 Masson 397, Fed. Cas. 14,312; Paige v. Rocky Ford Canal & Irr. Co., 83 Cal. 84, 21 Pac. Rep. 1102, 23 Pac. Rep. 875; Chauvet v. Hill, 93 Cal. 407, 28 Pac. Rep. 1066; Warren v. Westbrook Mfg.

Co., 86 Me. 32, 29 Atl. Rep. 927, 26 L. R. A. 284; Davis v. Fuller, 12 Vt. 178, 36 Am. Dec. 334; Low v. Schaffer, 24 Ore. 239, 33 Pac. Rep. 678; Buddington v. Bradley, 10 Conn. 213, 26 Am. Dec. 386; Shury v. Piggott, 3 Bulst. 339, Popham 169, 79 Eng. Reprint 1263; Brown v. Best, 1 Wilson 174; Miner v. Gilmour, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Reprint 861; Saunders v. Newman, 1 B. & Ad. 258, 106 Eng. Reprint 95; Lyon v. Fishmongers' Co., L. R. 1 App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1; Bealey v. Shaw, 6 East. 208, 2 Smith 321, 102 Eng. Reprint 1266; Mason v. Hill, 3 B. & Ad. 304, 110 Eng. Reprint 114; Wright v. Howard, 1 Sim. & Stu. 190, 1 L. J. Ch. 94, 24 Rev. Rep. 169, in which

the theory of the ownership of the bed of the stream rather than the bank,³ "*Prima facie*, every proprietor on each bank of a river is entitled to the land covered with the water to the middle of the thread of the stream, or, as is commonly expressed, *usque ad filum aquae*. By virtue of this ownership he has a right to the use of the water flowing over it, in its natural current, without diminution or obstruction. But strictly speaking he has no property in the water itself but a simple use of it as it passes along."⁴

it was held that every owner on the banks of a river has, *prima facie*, an equal right to use the water, and can not acquire a right to throw the water back on the proprietor above, or to divert it from the proprietor below; without a grant or twenty years' enjoyment, which is evidence of a grant.

See, also, *Dickinson v. Grand Junction Canal Co.*, 7 Exch. 279, 21 L. J. Exch. N. S. 241, 16 Jur. 200; *Rex v. Trafford*, 1 B. & Ad. 259, 20 Eng. C. L. Rep. 498, 8 Bing. 204, 21 Eng. C. L. 272; *Saunders v. Newman*, 1 B. & Ad. 258, 106 Eng. Reprint 95; *Wood v. Waud*, 3 Ex. Ch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Embrey v. Owen*, 6 Ex. Ch. 35, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Chasemore v. Richards*, 5 H. & N. 989; *Mason v. Neil*, 3 B. & Ad. 304, 110 Eng. Reprint 114; *Crossley v. Lightowler*, L. R. 3 Eq. 296, L. R. 2 Ch. 478, 36 L. J. Ch. N. S. 584, 16 L. T. N. S. 438, 15 Week. Rep. 801; *Atchinson v. Peterson*, 1 Mont. 561, 1 Morr. Min. Rep. 583; 87 U. S. 20 Wall. 507, 22 L. Ed. 414, in which it was held that "on the mineral lands of the public domain, in the Pacific States and Territories, the doctrine of the common law, declaratory of the rights of riparian proprietors, respecting the use of running waters, are inapplicable, or applied only to a very limited extent, to the necessities of miners, and inadequate for their protection. Their

prior appropriation gives the better right to running waters, to the extent in quantity and quality necessary for the use to which the water is applied.

See, also, *Davies v. Getchell*, 50 Me. 602, 79 Am. Dec. 636; *Pillsbury v. Moore*, 44 Me. 154, 69 Am. Dec. 91; *Johns v. Stevens*, 3 Vt. 308; *Anthony v. Lapham*, 5 Pick. (Mass.) 175; *Cary v. Daniels*, 8 Met. 466, 41 Am. Dec. 532; *Pratt v. Lamson*, 2 Allen 275; *Tourtelot v. Phelps*, 4 Gray 370; *Cowles v. Kidder*, 24 N. H. 364, 57 Am. Dec. 287; *Buddington v. Bradley*, 10 Conn. 213, 26 Am. Dec. 386; *Gillett v. Johnson*, 30 Conn. 180; *Taylor v. Welch*, 6 Ore. 199; *King v. Tiffany*, 9 Conn. 162; *Coffman v. Robbins*, 8 Ore. 278, 8 Morr. Min. Rep. 131; *Hutchinson v. Coleman*, 10 N. J. 5 Hol. 74; *Bowman v. Wathen*, 2 McLean 376, Fed. Cas. No. 1,740; *Dilling v. Murray*, 6 Ind. 324, 63 Am. Dec. 385; *Evans v. Merriweather*, 3 Seam. (Ill.) 492, 38 Am. Dec. 106; *Rhodes v. Whitehead*, 27 Tex. 304, 84 Am. Dec. 631; *Davis v. Fuller*, 12 Vt. 178, 36 Am. Dec. 334; *Adams v. Barney*, 25 Vt. 225; *Howe Scale Co. v. Terry*, 47 Vt. 109; 3 Kent's Com. 439, side paging; *Angell on Water Courses*, Secs. 95-97.

³ *Tyler v. Wilkinson*, 4 Mason 400, Fed. Cas. No. 14,312.

⁴ See, also, *Webb v. Portland Mfg. Co.*, 3 Sum. Cir. Ct. R. 189, Fed. Cas. No. 17,322; *Bowman Devises v. Wa-*

By the rules of common law all proprietors of lands have precisely the same right to waters flowing through their domains, and one can never be permitted to so use the stream as to injure or annoy those who are situated on the course of it, either above or below him. And if any person on the river interposes an impediment, interrupts or diverts the course of the water to the injury of others, successive actions on the case would lie until the interruption should be removed.⁵ This right to use the water of a stream at its ordinary flow is regarded and protected by the common law authorities as

then, 2 McLean 376, Fed. Cas. No. 1,740; affirmed, 42 U. S. 1 How. 189, 11 L. Ed. 97; *Action v. Blundell*, 12 M. & W. 324, 13 L. J. Exch. N. S. 289; *Owen v. Field*, 102 Mass. 90; *Corning v. Troy Iron Factory*, 40 N. Y. 191, 39 Barb. 311; *Hoy v. Sterrett*, 2 Watts. 327; *Tyler v. Wilkinson*, 4 Mason 377, Fed. Cas. No. 14,312; *Callis on Sewers* 268; 2 Black. Com. 18; 3 Kent Com. 439.

⁵ In the case of *Ingraham v. Hutchinson*, 2 Conn. 584, Chief Justice Swift laid down the law as follows: "By common law every person owning land on the banks of rivers has a right to the use of water in its natural stream without diminution or alteration; that is, he has a right that it should flow *ubi currere solebat*; and if any person on the river above him interrupts or diverts the course of the water to his prejudice, the action will lie. This will give to every one all the advantage he can derive from the water which does not injure the proprietor of lands on the river below him." *Arnold v. Foot*, 12 Wend. 330, where a spring of water rises upon the land of one owner, and from it runs a stream on to the land of another, the owner of the land upon which is the spring has no right to divert the stream from its natural channel, although the waters of the stream are

not more than sufficient for his domestic uses, for his cattle, and for irrigating his land.

See, also, *Frankum v. Falmouth*, 25 Eng. Com. Law. Rep. 526, 6 Car. & P. 529, 2 Ad. & El. 452, 4 L. J. K. B. N. S. 26, 90; *King v. Tiffany*, 9 Conn. 162; *Buddington v. Bradley*, 10 Conn. 213, 26 Am. Dec. 386, where it was held that the owner of land through which a watercourse passed has a right to the flow of the water in its natural course *without diminution or alteration*.

See, also, *McCalmont v. Whitaker*, 3 Rawle 84; *Hendricks v. Johnson*, 6 Port. (Ala.) 472; *Pugh v. Wheeler*, 19 N. C. 2 Dev. & Bat. 50; *Merritt v. Parker*, 1 Coxe's N. J. L. 460.

See, also, *Lakeside Paper Co. v. State*, 45 App. Div. 112, 60 N. Y. Supp. 108; *Philadelphia v. Carmany*, 18 W. N. C. 152; *Sumner v. Gloversville*, 35 Misc. 523, 71 N. Y. Supp. 1088; *Crawford v. Hall*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647.

The natural flow of a stream can not be deflected by jetties built out into the stream. *Morton v. Oregon S. L. R. Co.*, 48 Ore. 444, 87 Pac. Rep. 151, 7 L. R. A., N. S., 344, 120 Am. St. Rep. 827; *Chicago, R. I. & P. Co. v. Groves*, 20 Okla. 101, 93 Pac. Rep. 755, 22 L. R. A., N. S., 802.

property,⁶ not as a mere easement or appurtenance to the land, but as inseparably annexed to the soil itself.⁷ In the case of *Lux v. Haggin*⁸ the Court explains this principle as follows: "By common law the right of the riparian proprietors to the flow of the stream is inseparably annexed to the soil and passes with it, not as an easement or appurtenance, but as part and parcel of it. Use does not create the right, and disuse can not destroy or suspend it. The right in each extends to the natural and usual flow of all the water, unless the quantity has been diminished as a consequence of the reasonable application of it by other riparian owners for purposes hereafter to be mentioned."⁹

⁶ See riparian rights as property, Sec. 453.

See, also, *Nuttall v. Bracewell*, L. R. 2 Ex. 1; *Hadley v. Hadley Mfg. Co.*, 4 Gray 140; *Gould v. Boston Duck Co.*, 13 Gray 442; *Ashley v. Pease*, 18 Pick. 268; *Blanchard v. Baker*, 8 Me. 253, 25 Am. Dec. 504; *Keeney & W. Mfg. Co. v. Union Mfg. Co.*, 39 Conn. 576; *McCalmont v. Whitaker*, 3 Rawle 84; *Brown v. Bush*, 45 Pa. St. 61; *Beissell v. Scholl*, 4 U. S. 4 Dallas 211, 1 L. Ed. 804.

Water power, though an incident to property in the land, is itself the subject of property. *Tillotson v. Smith*, 32 N. H. 94, 96, 64 Am. Dec. 355; *Eddy v. Simpson*, 3 Cal. 249, 58 Am. Dec. 408; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁷ *Dickinson v. Grand Junction Canal Co.*, 7 Exch. 299, 21 L. J. Exch. N. S. 241, 16 Jur. 200; *Wright v. Howard*, 1 Sim. & Stu. 190, 1 L. J. Ch. 94, 24 Rev. Rep. 169; *Wood v. Waud*, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; *Johnson v. Jordan*, 2 Met. 234, 37 Am. Dec. 85; *Gardner v. Newburg*, 2 Johns. Ch. 162, 7 Am. Dec. 526; *Evans v. Merriweather*, 3 Scam. (Ill.) 492, 38 Am. Dec. 108;

Union Mill Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Shamleffer v. Peerless Mill Co.*, 18 Kan. 24; *Hill v. Newman*,⁵ 5 Cal. 445, 63 Am. Dec. 140, 4 Morr. Min. Rep. 513; *Heath v. Williams*, 25 Me. 209, 43 Am. Dec. 265; 2 Black. Com. 14.

⁸ 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁹ See, also, Angell on Water Courses, Sec. 93; *Shury v. Piggot*, 3 Bulst. 339, Popham 169, 79 Eng. Reprint 1263, 81 Eng. Reprint 280; *Countess of Rutland v. Bowles*, Palmer 290; *Washburn on Easements* 319; *Johnson v. Jordan*, 2 Met. 234, 37 Am. Dec. 85; *Tyler v. Wilkinson*, 4 Mason 397, Fed. Cas. No. 14,312; *Sampson v. Hoddinott*, 1 C. B. N. S. 590, 87 E. C. L. 590, 3 Jur. N. S. 243, 26 L. J. C. P. N. S. 148, 5 Week. Rep. 230; *Hill v. Newman*, 5 Cal. 445, 63 Am. Dec. 140, 4 Morr. Min. Rep. 513; *Pope v. Kinman*, 54 Cal. 3; *Creighton v. Evans*, 53 Cal. 55.

The right of a riparian owner to have the water of a stream run through his land is a vested right, and any interference with it imports at least nominal damages, even if there be no actual damages. See, also, *Ferrea v. Knipe*, 28 Cal. 340, 87 Am. Dec.

The right to the natural flow of the water, being but one of the riparian rights, does not depend on the ownership of the soil over which the water flows, as was held in some of the early cases, but upon the ownership of the bank by which it flows.¹⁰ In the common law Western States it is also held that riparian owners have a right to have the stream flow past their land in its usual course, and this right, so far as it is of regular occurrence and beneficial to their land, is a right of property and a part and parcel of the land itself, and such right may not be taken away except under the power of eminent domain.¹¹

§ 544. Right to natural flow.—Right to whole flow.—The right of one or more proprietors of several to the flow of a stream can not be divided if the division is opposed by the others. So, if a water course divides two estates, the riparian owner of neither can lawfully carry off any part of the water without the consent of the owner opposite; and not only this, but he must also obtain the consent of all the proprietors above and below who would be affected, or damaged by the diversion. In other words each proprietor is entitled not to half, or other proportion of the water, but to the whole bulk of the stream undivided and indivisible. The joint proprietors must use it as an entire stream in its natural channel. A severance would destroy the rights of all. It is impossible from the very nature of things that one proprietor can take water only from his side, as an equal portion from the other side of the stream must have mingled with all that was diverted. All parties are entitled *per my et per tout*, to their proportion of the whole stream as it naturally flows in its course, and no proprietor can divert any portion of it, although the portion diverted be less than

128; *Hale v. McLea*, 53 Cal. 578; *Wadsworth v. Tillottson*, 15 Conn. 366, 37 Am. Dec. 391.

¹⁰ See Secs. 451, 452. But see *Angell on Water Courses*, Sec. 5; note to *Gardner v. Newburg*, 2 Johns. Ch. 162, 7 Am. Dec. 526.

¹¹ *Miller & Lux v. Madera Canal & Irr. Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S., 391; *Dement Bros. Co. v. City of Walla Walla*, 58 Wash. 60, 107 Pac. Rep. 1038; *Hay-*

ward v. Mason, 54 Wash. 649, 104 Pac. Rep. 139.

The right of a riparian owner to the natural flow of the waters of a stream across his lands is a part of the land itself, and passes by a grant as realty. *Menthon Cattle Co. v. Williams*, 64 Wash. 457, 117 Pac. Rep. 239.

See, also, *Still v. Palouse Irr. & Power Co.*, 64 Wash. 606, 117 Pac. Rep. 466.

any proprietor be actually entitled to.¹ This right to the flow of the water is a natural right.² "The unquestioned rule of the common law was that every riparian owner was entitled to the continued flow of the stream. It is enough, without other citations or quotations, to quote the language of Chancellor Kent,"³ and, under a strict construction of the common law rule, a riparian owner has the right to have the entire stream continue to flow through or by his land, whether he has any use for it or not.⁴ So sacred do the common law authorities hold this right of the riparian owners to the flow of the water in its natural channel without material diminution or obstruction that they even go so far as to hold that an owner above on the stream, in protecting his own land from injury, can not cut off the water of the stream by a dam, if it obstructs or diminishes the flow of the stream to those below him.⁵ So, also, the right to the continuance of the natural and ordinary flow of the water across and past his lands can not be taken or damaged for a public use without just compensation.⁶

¹ *Vanderburg v. Van Berger*, 13 Johns. (N. Y.) 212; *Blanchard v. Baker*, 8 Greenl. (Me.) 253, 23 Am. Dec. 504; *Webb v. Portland Mfg. Co.*, 3 Summ. 198, Fed. Cas. No. 17,323; *Corning v. Troy Iron Factory*, 40 N. Y. 191; *Parker v. Griswold*, 17 Conn. 288, 9 L. R. A. 810, 42 Am. Dec. 739; *Curtiss v. Jackson*, 13 Mass. 507; *Bear v. Hoffman*, 79 Pa. St. 71; *Elliot v. Fitchburg R. Co.*, 10 Cush. (Mass.) 191, 57 Am. Dec. 85; *Plumleigh v. Dawson*, 6 Ill. (Gilman) 544, 41 Am. Dec. 199; *Angell on Water Courses*, Sec. 101; *Moulton v. Newburyport Water Co.*, 137 Mass. 163.

² *Stockoe v. Singers*, 8 El. & Bl. 31.

³ Mr. Justice Brewer, in *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770, quoting 3 Kent, Sec. 439. For this section from Kent, see Sec. 505.

⁴ *Ulbricht v. Eufaula W. Co.*, 86 Ala. 587, 6 So. Rep. 78, 4 L. R. A.

572, 11 Am. St. Rep. 72; *Ennor v. Barwell*, 2 Giff. 410, 6 Jur. N. S. 1233, 66 Eng. Reprint 171; *Bannatyne v. Cranston*, Mor. Diet. 12,769, *Property*; *Ellis v. Clements*, 21 Ont. Rep. 227; affirmed, 22 *Id.*, 216; *Brown v. Best*, 1 Wils. 174; *Saunders v. Bluefield W. Wks. & I. Co.*, 58 Fed. Rep. 133; *Pettibone v. Maclem*, 45 Mich. 381, 8 N. W. Rep. 84; *Ferreira v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Bliss v. Johnson*, 76 Cal. 597, 16 Pac. Rep. 542, 18 Pac. Rep. 785; *Ingraham v. Hutchinson*, 2 Conn. 584; *Kalama El. L. & P. Co. v. Kalama D. Co.*, 48 Wash. 612, 94 Pac. Rep. 469, 22 L. R. A., N. S., 641, 125 Am. St. Rep. 948.

⁵ *Bliss v. Johnson*, 76 Cal. 597, 16 Pac. Rep. 542, 18 Pac. Rep. 785; *Howe v. Norman*, 13 R. I. 488.

⁶ *Kalama etc. Co. v. Kalama D. Co.*, 48 Wash. 612, 94 Pac. Rep. 469, 22 L. R. A., N. S., 641, 125 Am. St. Rep. 948.

As was stated by the learned author, in Washburn on Easements: ⁷ "The right of enjoying this flow without disturbance or interruption by any other proprietor is one of *jure naturae*, and is an incident of property in the land, not an appurtenance to it, like the right he has to enjoy the soil itself, in its natural state, unaffected by the tortious acts of a neighboring landowner. It is an inseparable incident to the ownership of land, made by an inflexible rule of law an absolute and fixed right, and can only be lost by grant or twenty years' adverse possession." And again, the common law upon the subject as laid down by Professor Pomeroy in equally clear and explicit language, is as follows: "The use of the stream, and of the water flowing through it, forms a part of the rights incident to and involved in the ownership of the lands upon its borders. This is the principle recognized by the common law, and which should be recognized by any auxiliary legislation. It is, moreover, a natural law, an inevitable fact, which no legislation can change. Any statute denying this fact simply attempts an impossibility."⁸ And, the Supreme Court of Oregon, commenting upon the rule in the case of Benton v. Johnsox,⁹ said: "While the doctrine announced by the foregoing authorities has never, so far as we are advised, been directly denied, it has been apparently ignored by the courts in some of the Pacific States and Territories, on the theory that the principles and rules of the common law respecting the rights of private riparian owners were inapplicable to the condition and necessities of the people of the particular localities where the causes of action arose."

§ 545. **Right to natural flow—Obstructing flow.**—The rule stated in a previous section that the riparian proprietors have the right to have the stream flow down to their lands as it is wont to flow by nature and without material diminution, applied to obstructing the flow of the stream even temporarily. An action for the diversion of a water course is grounded on the deprivation of water; and, hence, if the owner complaining is deprived of the water by any means the law will interfere. It is as illegal to detain the water unreasonably as to divert it, for although each

⁷ 4th Ed., pp. 316, 317.

⁹ 17 Wash. 277, 49 Pac. Rep. 496, 39

⁸ Pomeroy on Riparian Rights, Sec. 152. L. R. A. 107, 61 Am. St. Rep. 912.

60—Vol. I—Kin. on Irr.

owner has the equal right to use the water as it passes his land for the purpose of propelling machinery and the like, yet he must so construct his works, and so use the water, that the flow of the stream must not be unreasonably obstructed, and that all of the owners below may participate without interruption in the enjoyment of the same water and for the same purposes should they desire it.¹ It must not be understood, however, that by the above doctrine there can be no diminution of the flow, or that there can be no obstruction or impediment whatever, by a riparian proprietor in the use of the water as it flows, for that would deny any valuable use of it at all. There may be and there must be allowed that which is common to all—a reasonable use. The reasonableness of detention of the flow of the stream by a riparian proprietor above, causing injury to those proprietors below, depends upon all of the circumstances of each particular case, including the size of the stream, the time the water was detained, and the use that was made of the water by all interested.² The mere detention of a stream for a short time, in order to fill a pond, and then after it is filled to let down the entire flow of the stream, may be permitted.³ However, the supply to the lower proprietor

1 See use of water for power purposes, Sec. 492; Angell on Water Courses, Sec. 115; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Miner v. Gilmour*, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Reprint 861; *Arnold v. Foote*, 12 Wend. (N. Y.) 330; *Howell v. McCoy*, 3 Rawle 256, 26 N. E. Rep. 305, 21 Am. St. Rep. 740; *McKee v. Delaware & H. Canal Co.*, 125 N. Y. 353; affirmed, 52 Hun 52, 4 N. Y. Supp. 753; *Hoy v. Sterrett*, 2 Watts 327, 27 Am. Dec. 313; *Twiss v. Baldwin*, 9 Conn. 291; *Sackrider v. Beers*, 10 Johns. 241; *Shears v. Wood*, 7 J. B. Moore 345, 1 L. J. C. P. 3; *Thompson v. Crocker*, 9 Pick. 59; *Soul v. Russell*, 13 Met. 436; *Merritt v. Brinkerhoff*, 17 Johns. 306; *Gerrish v. Newmarket Mfg. Co.*, 30 N. H. 478; *Gould v. Boston Duck Co.*, 13 Gray 452; *Hartzall v. Sill*, 12 Pa. St. 248; *Timm*

v. Bear, 29 Wis. 254; *Clinton v. Myers*, 46 N. Y. Rep. 511, 7 Am. Rep. 373; *Mason v. Hoyle*, 56 Conn. 255, 14 Atl. Rep. 786; *Shears v. Wood*, 7 J. B. Moore 347; *Phillips v. Sherman*, 64 Me. 171; *Barrett v. Parsons*, 10 Cush. (Mass.) 367; *Thunder Bay Boom Co. v. Speechly*, 31 Mich. 336, 18 Am. Rep. 184; *Woodin v. Wentworth*, 57 Mich. 278, 23 N. W. Rep. 813; *Wooden v. Mount Pleasant Lum. Co.*, 106 Mich. 412, 64 N. W. Rep. 329; *Whitney v. Wheeler Cotton Mills*, 151 Mass. 396, 7 L. R. A. 613, 24 N. W. Rep. 774.

2 *Tyler v. Wilkinson*, 4 Mason 401, Fed. Cas. No. 14,312.

3 *Hartzall v. Sill*, 12 Pa. St. 248; *Canfield v. Andrew*, 54 Vt. 1, 41 Am. Rep. 828; *Mumpower v. Bristol*, 90 Va. 153, 17 S. E. Rep. 853; *Coldwell v. Sanderson*, 69 Wis. 52, 28 N. W. Rep. 232, 33 N. W. Rep. 591; *Gehlen v. Knorr*, 101 Iowa 700, 70 N. W. Rep.

must not depend upon the convenience or caprice of the upper proprietor, or upon accident or mere chance, as upon the raising of a flood gate or overflow of a dam or leakage through it, but his supply must be substantially according to the natural flow, subject only to such interruption as is necessary and unavoidable by the reasonable and proper use of the water in the stream above.⁴

§ 546. **Right to natural flow—Accelerating flow.**—The rule as to the right of the riparian proprietors to the natural flow of the water of a stream¹ also applies to the acceleration of the current of a stream, whereby the lower proprietor is injured. The lower proprietor has the right to insist that the water flow as it is wont by Nature.² Hence it follows that an upper proprietor has no right to accumulate a large head of water, by any means, and then discharge the accumulated flow upon the works and lands of the proprietors below.³ So, also, an upper proprietor has no right to discharge the natural drainage of his land, or the sur-

757, 36 L. R. A. 697, 63 Am. St. Rep. 416; Louisville & N. R. Co. v. Beauchamp, 19 Ky. L. Rep. 398; DeBaun v. Bean, 29 Hun 236; Gould v. Boston Duck Co., 13 Gray 442; Pitts v. Lancaster, 54 Mass. 13 Met. 156; Mabie v. Matterson, 17 Wis. 1; Springfield v. Harris, 4 Allen 494, 81 Am. Dec. 715; Parker v. Hotchkiss, 25 Conn. 321.

⁴ Ware v. Allen, 140 Mass. 513, 5 N. E. Rep. 629; Fisher v. Feige, 137 Cal. 39, 69 Pac. Rep. 618, 59 L. R. A. 333, 92 Am. St. Rep. 77.

¹ See Secs. 543-545.

² See Sec. 543; Merritt v. Brinkerhoff, 7 Johns. 306.

³ In the case of Kelly v. Lett, 35 N. C. 13 Ired. 50, where this was done wilfully, and with the intent to injure the plaintiff, trespass *vi et armis* was held to be the proper remedy.

See, also, Haywood v. Edwards, Phila. Law. 350; McKee v. Delaware & H. Canal Co., 125 N. Y. 353, 26 N.

E. Rep. 305, 21 Am. St. Rep. 740; affirmed, 52 Hun 52, 4 N. Y. Supp. 753, where it was held that a riparian owner who retains or stores the waters of a natural stream and discharges them in such quantities as to cause it to overflow its banks and injure the lands of a riparian proprietor below, is liable for a trespass, and for the damages occasioned thereby, and may also be restrained therefrom by injunction.

See, also, Rhodes v. Airedale Drainage Comrs., L. R. 1 C. P. Div. 402, 45 L. J. C. P. N. S. 861, 35 L. T. N. S. 46, 24 Week. Rep. 1053; Grant v. Kuglar, 81 Ga. 637, 8 S. E. Rep. 878, 3 L. R. A. 606; Frechette v. La Compagnie Manufacturiere, L. R. 9 App. Cas. 1,709, 53 L. J. C. P. N. S. 20, 50 L. T. N. S. 62; Mississippi Mills Co. v. Smith, 69 Miss. 299, 11 So. Rep. 26, 30 Am. St. Rep. 546; Boyington v. Squires, 71 Wis. 276, 37 N. W. Rep. 227.

face water accumulated thereon in ponds, or the water drawn from wells therein, into a natural water course, if in so doing he thus accelerates the natural flow and increases the volume of the water in the stream to a point whereby the capacity of the stream is exceeded and the riparian proprietors below are injured in any manner.⁴

§ 547. **Right to natural flow—Backing up water.**—A riparian proprietor has the right to have the water flow by or off his land at its natural height; and hence a lower owner has no right to make obstructions in the stream on his own land which will have the effect of backing up the water and submerging the land of an upper owner.¹ And an action will lie for backing up water as soon as it interferes with a use to which the upper proprietor attempts to put his land, although he was not making such use of the land when the dam was built.² So, too, a dam which sets the water back so as to interfere with the drainage of the land of the upper owner is a violation of his rights.³ Again, a lower proprietor has no right to construct his dam so as to throw the water back on the lands of the upper owner in times of ordinary

⁴ Jackman v. Arlington Mills, 137 Mass. 277; Wheeler v. Worcester, 10 Allen 591; McCormick v. Hiram, 81 N. Y. 86, 37 Am. Rep. 479; Williams v. Gale, 3 H. & John. 231; Miller v. Lambach, 47 Pa. St. 154, 86 Am. Dec. 521; Treat v. Bates, 27 Mich. 390; Noonan v. Albany, 79 N. Y. 470, 35 Am. Rep. 540; Davison v. Hutchinson, 44 N. J. Eq. 474, 15 Atl. Rep. 257; Wagner v. Chaney, 19 Ill. App. 546; Kay v. Kirk, 76 Md. 41, 24 Atl. Rep. 326, 35 Am. St. Rep. 408.

¹ Gibson v. Fischer, 68 Iowa 29, 25 N. W. Rep. 914; Brown v. Bowen, 30 N. Y. 519, 86 Am. Dec. 406; Omelvany v. Jaggars, 2 Hill L. 634, 27 Am. Dec. 417; McCalmont v. Whitaker, 3 Rawle 84, 23 Am. Dec. 102; Stout v. McAdams, 3 Ill. 67, 33 Am.

Dec. 441; Booker v. McBride, 16 Tex. Civ. App. 348, 40 S. W. Rep. 1031; Yeargain v. Johnson, 2 N. C. 80, 1 Am. Dec. 581; Styte v. Mordant, 1 Rolle Abr. 104; Ames v. Dorset Marble Co., 64 Vt. 10, 23 Atl. Rep. 857.

But see Monongahela Nav. Co. v. Coon, 6 Pa. 383, 47 Am. Dec. 474; Proctor v. Jennings, 6 Nev. 83, 3 Am. Rep. 240; Smith v. Agawam Canal Co., 2 Allen 355.

² McLaren v. Cook, 3 U. C. Q. B. 299; King v. Tiffany, 9 Conn. 162; Whipple v. Cumberland Mfg. Co., 2 Story 661, Fed. Cas. No. 17,516.

³ Treat v. Bates, 27 Mich. 390.

See, also, Snow v. Cowles, 22 N. H. 302; Hastings v. Livermore, 7 Gray 194; Ferris v. Wellborn, 64 Miss. 29, 8 So. Rep. 165.

freshets. But he is not responsible for damages caused by extraordinary floods.⁴

§ 548. **Rights of riparian owner to the products of the water.**—In addition to the rights enumerated in this and other chapters of this part, riparian owners have certain rights to the products of the waters of the streams which adjoin or run through their lands. As we have discussed in a previous section, they have the exclusive right to the ice which forms on the stream in front of their lands, provided the streams are private and not subject to such right by the general public;¹ but, as we have before stated, the taking of the ice is, in fact, the taking of water itself.² Other rights may be enumerated, as the exclusive right to take the fish from the water opposite the owner's land.³ He has the right to take the sand and gravel from the bed of the stream, where he can do so without injury to other riparian owners, or to the public.⁴ He also has the right to take the driftwood floating down the stream, where he can capture it, as it passes through or adjoining his lands.⁵ There are many other rights to which such owner is entitled which are unnecessary to enumerate here. But, in general, it may be stated that he is entitled to all the rights to the water of the stream, and to its products, which do not materially and substantially interfere with the rights of the other riparian proprietors upon the same stream, or with the rights of the public.

⁴ *Bristol Hydraulic Co. v. Boyer*, 67 Ind. 236.

See, also, *Humphry v. Irvin*, 18 W. N. C. 449; *Casebeer v. Mowry*, 55 Pa. 419, 93 Am. Dec. 766; *Pugh v. Wheeler*, 19 N. C. 2 Dev. B. N. C. 50; *Dorman v. Ames*, 12 Minn. 451 (Gil. 347); *Ames v. Cannon River Mfg. Co.*, 27 Minn. 245; 6 N. W. Rep. 787; *McCoy v. Danley*, 20 Pa. 85, 57 Am. Dec. 680; *China v. Southwick*, 12 Me. 238.

For the act of God as a defense, see Part XIII.

For actions for flooding lands, see Part XIII.

¹ For right to take ice on public streams, see Secs. 337, 493.

² See Sec. 493.

³ For right of fishing in private streams, see Sec. 365.

⁴ *Commissioner v. Hipple*, 7 Pa. Dis. Rep. 399.

⁵ The owner of a bank of a river has an absolute ownership of the driftwood which lodges upon his lands, or at least a qualified, possessory title good as against a trespasser or stranger to the title, and which is the subject of grant. *Yuba Consol. Goldfields v. Hilton*, 16 Cal. App. 228, 116 Pac. Rep. 712.

§ 549. **The modern Western rule of the "undiminished flow" of streams.**—In the preceding sections we have discussed the right of a riparian proprietor to the undiminished flow of a natural stream which washes his lands, more from the standpoint of the strict construction of the common law. But, as we have seen, in the Western States of this country the common law rules of riparian rights have been modified to a great extent, and especially relative to the use of the waters of natural streams, thereby permitting, even under the common law as it is applied in these States, a more liberal use of the water, especially for the irrigation of lands.¹ As water must be diverted from the natural streams for the purpose of irrigation, and as a considerable portion of the same is consumed in the operation, it must follow that the old rule of the common law of the "undiminished flow" of the water can not be followed with the same degree of strictness as it is in England and in the Eastern States, where such a use of the water is not made to any great extent. And, upon this subject, it may be said that in no respect have the rules of the common law, as they have been handed down to us, been modified or extended more than upon the subject of the undiminished flow.

In the case of *Sturr v. Beck*² it was held by the Supreme Court of the United States, following the strict construction of the common law, to the effect that the plaintiff could make no appropriation of the water as against Beck, who was a riparian proprietor and by virtue of that right was entitled to the undiminished flow of the stream. The Court, quoting from the former case of *Atchison v. Peterson*,³ said: "The Government being the sole proprietor of all the public lands, whether bordering on streams or otherwise, there was no occasion for the application of the common law doctrine of riparian proprietorship with respect to the waters of those streams." The Court then concluded its remarks upon this branch of the subject by saying: "When, however, the Government ceases to be the sole proprietor, the right

¹ For Irrigation as a Riparian Right, see Chap. 26, Secs. 498-525.

For the modification of the common law as to the use of waters, see Secs. 508-513.

² 133 U. S. 541, 33 L. Ed. 761, 10 Sup. Ct. Rep. 350.

³ 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; 1 Mont. 561.

of the riparian owner attaches, and can not be subsequently invaded. As the riparian owner has the right to have the waters flow *ut currere solebat*, undiminished except by reasonable consumption of upper proprietors, and no subsequent attempt to take the water only can override the prior appropriation of both land and water, it would seem reasonable that lawful riparian occupancy with intent to appropriate the land should have the same effect."

But, even the Supreme Court of the United States has materially changed its views in this respect. In the case of the United States v. Rio Grande Dam & Irrigation Co.⁴ the Court said: "By the Act of March 3, 1877,⁵ the right to appropriate such an amount of water as might be necessarily used for the purpose of irrigation and reclamation of desert land, part of the public domain, was granted, and it was further provided that 'all surplus water over and above such actual appropriation and use, together with the waters of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and be held free for the appropriation and use of the public for irrigation, mining, and manufacturing purposes, subject to existing rights.'"⁶ Also in the case of Kansas v. Colorado⁷ the same claim was asserted upon the part of Kansas as a riparian owner, as was decided in the case of Sturr v. Beck,⁸ and Kansas insisted that large quantities of the water were being diverted from the Arkansas River by the inhabitants of Colorado, a large number of whom were claiming a prior appropriation and diverting the water to nonriparian lands, as against Kansas, a riparian proprietor. The Court refused injunctive relief and dismissed the bill, stating,

⁴ 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

⁵ Ch. 107, 19 Stat. L. 377, the Desert Land Act; for this see, also, Chap. 66.

⁶ See, also, Gutierrez v. Albuquerque Land & Irr. Co., 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357.

⁷ 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552; 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

For a specific statement of the facts in this case disclosing that many of the defendants were using water on riparian lands, see the first opinion, which was on demurrer, Kansas v. Colo., 185 U. S. 125, 46 L. Ed. 838, 22 Sup. Ct. Rep. 552.

For decision upon the facts in the case, see 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

⁸ *Supra*.

in substance, that if the riparian doctrine should prevail in Kansas as against Colorado, and against the nonriparian users, whose rights were involved therein, Oklahoma and its citizens lower down on the Arkansas River might invoke the same rule in opposition to the citizens of Kansas and Colorado to their great injury, which doctrine, it is observed, would be ruinous in effect. The Court in dismissing the bill indicated that no injunction would lie until a more substantial injury could be shown, and at the same time held that the interference by a large number of the appropriators above in the State of Colorado materially depleted the flow to the riparian lands of the plaintiff State. In commenting upon this decision Mr. Justice King, in rendering the decision of the Supreme Court of Oregon, also a common law State, in the case of *Hough v. Porter*,⁹ said: "The opinion in the Kansas-Colorado case not only brushes aside the rule claimed to have been announced in *Sturr v. Beck*, regarding riparian rights, but discloses what, in the opinion of the writer, is a strong and commendable tendency on the part of that great Court to recognize that the rigid rules of common law, as interpreted and sought to be applied by those insisting upon the "undiminished flow" theory, are inapplicable to the many new and intricate questions necessarily arising under our form of Government and throughout the arid and semi-arid sections."

The Supreme Court of the United States also in the case of *Boquillas Land & Cattle Co. v. Curtis*,¹⁰ while not deciding the contention as to the effect of the Desert Land Act in reserving the waters for appropriation regardless of the rights of the patentees of land, but referring to the decision in the case of *Hough v. Porter*,¹¹ said: "The Supreme Court of Oregon has rendered a decision to that effect on plausible grounds."¹² But this is not all. The Supreme Court of California, the State that has most strenuously insisted upon the common law right of the "undimin-

⁹ 51 Ore. 318, 372, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728.

¹⁰ 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493, affirming the decision of the Supreme Court of Arizona, 11 Ariz. 128, 89 Pac. Rep. 504.

¹¹ *Supra*.

¹² See, also, the later Oregon case

of *Borman v. Blackmon*, — Ore. —, 118 Pac. Rep. 848, wherein it is said: "By this Act the General Government made the water, not only of lakes and rivers but also other sources of water supply upon the public lands and not navigable, the subject of appropriation."

ished flow," and that, too, whether the riparian owner actually used the water or was actually damaged by its diversion or not,¹³ by others for use, has also modified its views, and by its later cases holds to the effect that an injunction against an appropriation of the water for beneficial uses will not be granted on behalf of a riparian owner without use, or, in other words, without his showing actual, material, and substantial damage. As was said in a recent case:¹⁴ "Even if at common law or under the civil law it was a part of the usufructuary right of the riparian owner to have the water flow by for no purpose than to afford his pleasure in its prospect, such is not the rule of decision in this State. *The lower claimant must show damage to justify a Court of Equity in restraining an upper claimant from his beneficial use of the water.* The fair apportionment and economic use of the waters of this State are of the utmost importance to its development and well-being. The problems presented never came within the purview of the common law. They have been of necessity, therefore, and must continue to be solved by this Court as cases of first impression, and, as in the past so in the future, if a rule of decision at common law shall be found unfitted to the radically changed conditions existing in this State, so that its application will work wrong and hardship rather than betterment and good, this Court will refuse to approve and follow the doctrine." But this decision of California does not stand alone and is based upon earlier decisions of the same Court. In the case of *Modoc Land & Live Stock Co. v. Booth*¹⁵ it was said: "A riparian owner ought not to be permitted to invoke the power of a Court of Equity to restrain the diversion of water above him by a nonriparian owner,

¹³ *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Barneich v. Mercy*, 136 Cal. 205, 68 Pac. Rep. 589; *Ferrea v. Knipe*, 28 Cal. 340, 87 Am. Dec. 128; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Bliss v. Johnson*, 76 Cal. 597, 16 Pac. Rep. 542, 18 Pac. Rep. 785; *Heilbron v. Last Chance D. Co.*, 75 Cal. 117, 17 Pac. Rep. 65; *Heilbron v. Fowler etc. Co.*, 75 Cal. 426, 17 Pac. Rep. 535, 7 Am. St. Rep. 183.

The Nevada Court, referring to the above decisions, said: "The California decisions cited for the appellants may no longer be considered good law even in the State in which they were rendered." *Twaddle v. Winters*, 29 Nev. 88, 85 Pac. Rep. 280.

¹⁴ *San Joaquin etc. Co. v. Fresno etc. Co.*, 158 Cal. 626, 112 Pac. Rep. 182.

¹⁵ 102 Cal. 151, 36 Pac. Rep. 431.

when the amount diverted would not be used by him and would cause no loss or injury to him or his land, present or prospective, but would greatly benefit the party diverting it. If this be not so, it would follow, for example, that an owner of land bordering on the Sacramento River in Yolo County could demand an injunction restraining the diversion of any water from that river for use in irrigating nonriparian lands in Glenn or Colusa County, and yet no one, probably, would expect such an injunction, if asked for, to be granted, or, if granted, to be sustained."¹⁶ In fact, it may be stated that in all Western States which follow the common law of riparian rights the early English rule of "undiminished flow" has been modified and extended in accordance with the principles stated above. This subject, however, will be discussed more in detail when we come to the discussion of the right of injunction and damages by riparian owners.¹⁷

But the Supreme Court of Washington, in a recent case,¹⁸ adheres to the old common law rule as to the undiminished flow in the following language: "A riparian owner, such as respondents are here shown to be, has a right to the natural flow of the waters in their natural and accustomed channels without diminution or alteration, subject only to the same right and use in every other riparian owner, a right that is as much included in the ownership

¹⁶ See, also, *Fifield v. Spring Valley Water Works*, 130 Cal. 552, 62 Pac. Rep. 1054; *Miller v. Bay City Water Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S., 772; *Miller & Lux v. Madera Canal Co.*, 155 Cal. 61, 99 Pac. Rep. 502, 22 L. R. A., N. S., 391; *Mentone Irrigation Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222.

And the Court, after citing some of the early common law cases cited *supra*, in a case decided in 1909, said: "It is obvious, of course, that, if this supposed rule were strictly enforced against riparian owners, as well as appropriators, the waters in the streams of the State could not be

used at all, but would flow to the sea, or until they disappeared in the sands and washes, without benefit to any one, except in the few instances where flood waters might escape naturally and flow upon lands situated similar to those of the plaintiff. The rule is evidently not suited to the conditions of a dry climate such as we have in this State." *Turner v. James Canal Co.*, 155 Cal. 82, 99 Pac. Rep. 520, 22 L. R. A., N. S., 401, 132 Am. St. Rep. 59, 17 Am. & Eng. Ann. Cas. 823.

¹⁷ For right of injunction of riparian proprietors, see Chap. 81.

For actions for damages by riparian proprietors, see Chap. 83.

¹⁸ *Still v. Palouse Irr. & Pr. Co.*, 64 Wash. 606, 117 Pac. Rep. 466.

of the land as the soil itself, and can no more be interfered with by the acts of others. And, while the application of this doctrine has in some of the Western States sometimes been denied, on the theory that the rules of the common law respecting riparian owners were inapplicable to conditions and necessities of the people in the particular localities where the cause of action arose, it has since its first announcement here invariably been upheld in this State, except where it has been subjected to a priority of appropriation." ¹⁹

§ 550. **Other miscellaneous riparian rights.**—There are a number of other rights which the proprietors of land bordering on water courses have by virtue of their ownership under the common law. Some of these it will be unnecessary to discuss, as they do not properly come within the scope of this work; others will be or have been discussed under their respective heads. These are the right and liabilities of polluting waters;¹ the common law right to divert water for irrigation,² and for power purposes;³ the right of fishing and hunting;⁴ the common law rules as to subterranean waters;⁵ the loss of riparian rights by eminent domain;⁶ the common law right to use riparian rights under license;⁷ and the loss of riparian rights by prescription and adverse user.⁸ We shall also discuss the applicability of the common law theories as applied to the arid West.⁹

We shall also discuss in the course of this work the rights of appropriators as against the rights of riparian proprietors.¹⁰ Also the right of action by riparian proprietors for injunctions,¹¹ dam-

¹⁹ Citing *Crook v. Hewlitt*, 4 Wash. 749, 31 Pac. Rep. 28; *Rigney v. Tacoma Light & Pr. Co.*, 9 Wash. 576, 38 Pac. Rep. 147, 26 L. R. A. 425; *Benton v. Johncox*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *New Whatecom v. Fairhaven Land Co.*, 24 Wash. 493, 64 Pac. Rep. 735, 54 L. R. A. 190; *Madison v. Spokane Valley Land Co.*, 40 Wash. 414, 82 Pac. Rep. 718, 6 L. R. A., N. S., 257; *McEvoy v. Taylor*, 56 Wash. 357, 105 Pac. Rep. 851, 26 L. R. A., N. S. 222.

¹ See polluting waters, Chap. 58, Secs. 1129-1147.

² See Chap. 26, Secs. 498-525.

³ See Secs. 695, 847-855.

⁴ See Chap. 17, Sec. 365.

⁵ See Subterranean Waters, Secs. 1155, 1187-1190.

⁶ See Eminent Domain, Chap. 55, Secs. 1089-1091.

⁷ See Chap. 27, Secs. 526-535.

⁸ See Chap. 54, Secs. 1039-1041.

⁹ See Chap. 31, Secs. 585-594.

¹⁰ See Secs. 810-823.

¹¹ See Chap. 81.

ages,¹² and the division or apportionment of the waters between riparian owners for the individual use of each.¹³

§ 551. **Summary and conclusions.**—In summing up this chapter, we will say that under the common law doctrines, in their most general forms, all property in water courses and inland lakes and ponds, whether the same are actually navigable or not, is held sacred to the common use alike of all the riparian owners upon their borders; that the basis and foundation of this right is that their lands must touch upon the waters; that the nature of the ownership of the water is simply usufructuary, and that each proprietor may reasonably use the water for any purpose as it passes through or by his land; that the rights of all being equal, no one can use the water to the extent that it will injure those below; that after having used the water, if it has been diverted, he must return it without any substantial diminution in quantity or any material change in quality to its natural bed or channel before it leaves his own land, so that it will reach his neighbor below in its full, original, and natural condition. We have also seen that the natural current of a stream must neither be obstructed nor accelerated by any proprietor; that the riparian proprietor is entitled to all accretions and relictions that may be added to his land by the influence of the winds or tides, and thus always giving him frontage on the water and the right of access to and from his estate to the water, or to and from the water to his estate; that he also has the exclusive right of fishery opposite his land, and that no one can bar him from that right. Also we have seen that, contrary to the Arid Region Doctrine of appropriation, under the common law, priority of use by any one proprietor can give him no higher or more extensive rights than those which belong to all the other proprietors, either higher up or lower down the stream; and, although some of them may have come long after the first proprietor settled upon the stream, all whose lands touch upon the stream must share equally in the use of its waters. And, if one proprietor acquires more extensive rights than he is entitled to by virtue of his own riparian lands against the other proprietors, he must do so by a grant or license from all who are affected thereby or by prescription, which presupposes a grant.

¹² See Chap. 83.

¹³ See Chap. 78.

And, lastly, we shall see that these riparian rights may be lost by virtue of the right of eminent domain;¹ that the State, under this right, may acquire them; but it can not take, injure, or impair any of these rights in and to the waters of the stream, or any riparian proprietor, without due process of law, for a public purpose, and then only upon just compensation being paid to the owner of the same.

We shall also see, in the future discussions of this work, that the common law theories of riparian rights are, in the main, wholly inconsistent with the Arid Region Doctrine of appropriation of the water by diverting it from its natural channel for irrigation and other beneficial uses, and especially where that appropriation is based upon priority. Owing to the natural conditions of the greater portion of the arid West, the common law rules of riparian rights are wholly inapplicable to that portion of our country which is known as the arid region, and in many States these rules have been wholly abrogated, while in certain other States portions of the common law only have been retained.²

¹ See Secs. 1089-1091.

² That the common law is inapplica-

ble to the arid region, see Secs. 585-594.

PART VII.

THE CIVIL LAW GOVERNING WATERS.

CHAPTER 29. THE ROMAN CIVIL LAW.

- § 552. Scope of part and chapter.
- § 553. The civil law—Historical.
- § 554. Public and private waters.
- § 555. The ownership of the running water.
- § 556. The ownership of severed water.
- § 557. The right of navigation.
- § 558. Rights of riparian owners based on access.
- § 559. Miscellaneous rights of the owners of the banks.
- § 560. Surface waters.
- § 561. The acquisition of water rights.
- § 562. The right to the waters of springs.
- § 563. The right to subterranean waters.
- § 564. Grants of rights by riparian owners.
- § 565. Loss of water rights.
- § 566. Use of water for irrigation.
- § 567. Rights of way.
- § 568. Remedies.
- § 569. Roman laws—Concluding comparisons.

§ 552. **Scope of part and chapter.**—The law of appropriation and diversion of waters for beneficial uses, as the same is in force in the Western States of this country, finds its basis in two systems of laws. First, the common law doctrines of riparian rights upon the subject of use of waters, which have been discussed in previous chapters of this work;¹ second, the civil law, the rules of which govern waters, which we shall discuss in this part of this

¹ For the common law rules as to the use of water, see Chap. 25, Secs. 483-497. For irrigation as a riparian right, see Chap. 26, Secs. 498-525.

work. It will be noticed that the law of appropriation in principle follows the civil law more closely than it does the common law, although the California Courts and the Courts of some of the other States attempt to justify the diversion of water for irrigation and other uses which consume the water under the common law.²

In the following chapter we shall also endeavor to trace the civil law in its various modifications under the French, Dutch, Spanish, and Mexican rule down to the Louisiana Purchase,³ the Treaty of Guadalupe Hidalgo,⁴ and the Gadsden Purchase, and thus show the conditions of the country respecting waters in those portions of our territory acquired by this country at the time of their acquisition. In this manner we can show the growth and progress of the American system of the appropriation of waters, for beneficial uses, by the diversion of the same from the natural streams and applying it to those uses.

§ 553. **The civil law—Historical.**—The term "civil law" or Latin equivalent, *jus civile*, has been used in a great variety of meanings, both in ancient and modern times. In the sense in which it is used here, it is that great system of laws handed down to the modern world by the genius of the Roman people. Our knowledge of the Roman law is almost entirely found in that great codification made under the authority of the Roman Emperor, Justinian, known as "*corpus juris civilis*," and generally called "The Pandects," but sometimes "The Digest," which included all of the earlier Roman laws found in "The Code," "The Digest," and "The Novels." The work was done by commissioners appointed by Justinian and the objects of this codification, as determined from the orders given by the Emperor, were, to peruse all of the writings of all authorized jurists, and to extract from these works, giving credit to the original authors, whatever was of most permanent and substantial value, with power to change the expressions of the original authors wherever conciseness or clearness would be thereby promoted, or wherever such a change was needed in order to adapt their language to the condition of the law as it was in effect in Justinian's time. The commissioners were to avoid repetitions and contradic-

² See Chap. 26, Secs. 508-511.

⁴ See Secs. 576-583.

³ See Secs. 572-575.

tions by giving only one statement of the law upon any one point, and were to insert nothing at variance with any of the provisions in the *Codex Constitutionum*. The work of the commissioners was completed in the year 533 A. D., and in the same year the Emperor published it as an imperial statute. It is from this work that the civil law comes to us, and it has exerted a great influence both upon the common law of England, as will be seen in various portions of the same, and also upon the modern American law. This seems especially true upon the subject of waters, through the Dutch in New York, the French in Louisiana and other Southern States, and the Spanish and Mexicans in Texas and that great portion of this country known as the "arid region" of the United States, acquired from Mexico under the Treaty of Guadalupe Hidalgo and by the Gadsden Purchase.

While the Pandects were being codified the Emperor, Justinian, gave another order, that an abstract be prepared of the fundamental laws to be found in the Pandects, which work might be used as an elementary text book by law students. This work was also published as a statute with full legal validity shortly before the Pandects, and called "The Institutes of Justinian." This is the only work which has been fully translated into English, and embodies some of the fundamental principles of the Roman law upon the subject of waters.¹

We will now take up the subject of the Roman law of waters, after which we will endeavor to trace that law through the early Dutch, French, Spanish, and Mexican occupants of certain sections of this country down to the present time.

§ 554. **Public and private waters.**—Under the ancient Roman law, as the same is to be found in the Pandects and the Institutes of Justinian, the rivers and other bodies of water were divided into public and private, while the running water itself was counted as public. Things common to mankind by the law of Nature, are the air, *running water*, the sea, and consequently the shores of the sea, is the language used.¹ As to whether a body of water was

¹ See Cooper's Institutes of Justinian, 1852; Sander's Institutes of Justinian, 1876; Sohm, Institutes of Roman Law; Walton, Civil Law in Spain and Spanish America; Howe,

Studies in Civil Law, 1905; Ware, Roman Water Law, 1905.

¹ Inst. Lib. 2, T. 1, Sec. 1.

See, also, for the classification of waters, Secs. 287-291.

61—Vol. I.—Kin. on Irr.

public or private depended upon the fact as to whether or not it was navigable. Some rivers were regarded as public, others not. Cassius defined a public river as a perennial river, that is, one that flowed at all seasons of the year.² This is practically the classification under the common law.³ In fact, many of the principles and terms of the common law are taken directly from the civil law. The name of "riparian proprietor," indicating the owner of the *ripa* or bank of a stream, is borrowed from the civil law. As is stated by Mr. Angell:⁴ "The owners of water courses are denominated by the civilians riparian proprietors, and the use of the same significant and convenient term is now fully introduced into the common law." In fact, many of the principles of the common law were taken directly from the earlier civil law, and the terms used by the civil law have been adopted and carried down to us through the common law.⁵

§ 555. **The ownership of the running water.**—The common law borrowed from the civil law many things relative to the government and use of waters, and among these is the question of the ownership of the *corpus* of the running water. The civil law authorities upon the subject of the ownership of running waters may be summed up as follows: That the running water was a natural resource and was classed by the civil law writers, which also include the Institutes of Justinian, with the air and those things which can not be owned in their natural state and condition, or those which belong, according to the civil law rights, to the "negative community," or which belong to nobody. As was

2 D. 43, T. 12, Secs. 1, 3; Ware, Roman Water Law, Sec. 19.

NOTE.—In giving references to the Pandects or Digest, they will be given as above, that is to say: Dig. 43, Title 12, Sec. 1, Par. 3.

3 For the classification of public and private waters, see Secs. 287-291.

4 Angell on Water Courses, 7th Ed., Sec. 10.

5 Miner v. Gilmour, 12 Moore P. C. C. 131, 7 Week. Rep. 328, 14 Eng. Reprint 861.

See, also, Fleming v. Davis, 37 Tex.

173; Yale on Mining Claims and Water Rights, p. 153; Williams v. Moreland, 2 Barn. & C. 910, 107 Eng. Reprint 620; Liggins v. Inge, 7 Bing. 692, 5 Moore, p. 712, 9 L. J. C. P. 202; Wright v. Howard, 1 Sim. & S. 190, 1 L. J. Ch. 94, 24 Rev. Rep. 169, 2 Smith 321; Bealey v. Shaw, 6 East 208, 102 Eng. Reprint 1266; Irvine v. Phillips, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

said by Vattel: "There are things which in their own nature can not be possessed. There are things of which nobody claims the property, and which remain common, as in their primitive state when a nation takes possession of a country; the Roman lawyers called these things *res communes*, things common; such were, with them, the air, the running water, the sea, the fish, and wild beasts." ¹ As was said in the Digest or Pandects of Justinian,² there are certain things which by natural law are common, certain organizations, certain things belonging to nobody, and other things, the property of individuals acquired in various ways. The things which by natural law are common are as follows: The air, the running water, and the sea, and, it therefore follows, the shores of the sea; also the stones, gems, and the like, which we find upon the shore, by natural law immediately become ours. But almost all the rivers and harbors are public.

As we have seen in previous sections,³ the common law in adopting the principles of the civil law, as to the title to the *corpus* of running water, eliminated the negative element to the effect that they belong to nobody, or do not belong to anybody, and held to the effect that they were the common property of everybody, and therefore the title to the body of waters could not be acquired by an individual while it continues running in its natural channel.⁴ Both the civil and common law authorities classify the property in running waters by analogy with the property in wild animals or fishes swimming in the sea. As is said by Justinian, after referring to the property in flowing water, "Likewise wild animals, birds, and fishes, since before capture belong to no one, after capture belong to him who captures them."⁵

¹ Vattel, Law of Nations, see Chap. 20, Chitty's Translation, p. 109, Sec. 234.

See Institutes of Justinian, Bk. 2, Tit. 1, Sec. 1; Grotius, Bk. 2, Sec. 12; Puffendorff, Bk. 4, Chap. 5, Sec. 2; Pothier, Traité du Droit de Propriété, No. 21; Pardessus Traité des Servitudes, Vol. 1, p. 174; Colquhoun, Summary of Roman Law, Sec. 923; Lux v. Haggin, 69 Cal. 225, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Geer v.

Connecticut, 161 U. S. 519, 40 L. Ed. 793; 16 Sup. Ct. Rep. 600; Mason v. Hill, 5 Barn. & Adol. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 188, 110 Eng. Reprint 692; Ohio Oil Co. v. Indiana, 117 U. S. 190, 44 L. Ed. 729, 20 Sup. Ct. Rep. 576, 20 Morr. Min. Rep. 466.

² See Bk. 1, Tit. 8.

³ See Secs. 288, 289, 455.

⁴ See Secs. 288, 289.

⁵ Institutes of Justinian, Lib. 2, Tit. 1, Sec. 12.

§ 556. **The ownership of severed water.**—It is held by the authorities both under the civil law and the common law, as we have seen in preceding sections,¹ that there can be no individual property in running water. But it is further held in both of these systems of laws that water, after it has been severed from the natural stream and taken into reservoirs, tanks, or other receptacles, belongs to the possessor of the same.² As was said in a late Oregon case,³ "The water had been segregated by the plaintiff from the general supply, was impounded in his ditch, and was intended to be appropriated to his own use. It was under his control and had become his property."

§ 557. **The right of navigation.**—All navigable waters being public, the general public had the right to use them for any lawful purpose; the ports were also public; hence the right of fishing in ports or in public rivers was common to all.¹ Special stress was laid upon the preservation and facilitating of navigation. Therefore the interdict of the Praetor was to do nothing either in the stream itself or on the banks thereof whereby the landing or the

See, also, Pothier, *Traite du Droit de Propriété*, Opera Tom. 8, p. 137.

See, also, the case of the Swans, 7 Coke Rep. 15b, 77 Eng. Reprint 435; 2 Black. Com. 255.

¹ See Secs. 288, 289.

² See, also, for the right to water after diversion under the Arid Region doctrine of appropriation, Secs. 773, 774.

See Bowyer's Commentaries on the Civil Law, p. 61; Pothier, Opera Tom. 8, p. 149; Glue, Commentaries on the Digest, Lib. 1, Tit. 8.

See, also, Spring Valley Water Co. v. Schottler, 110 U. S. 347, 28 L. Ed. 173, 4 Sup. Ct. Rep. 173; Heyeman v. Blake, 19 Cal. 579; Stanislaus Water Co. v. Bachman, 152 Cal. 716, 93 Pac. Rep. 858, 15 L. R. A., N. S., 359; Vernon Irrigation Co. v. Los Angeles, 106 Cal. 237, 39 Pac. Rep. 762.

See, also, Magistrate v. Elphistone (Scotch), 2 Kame's Dec. 331; Embrey

v. Owen, 6 Ex. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; Mason v. Hill, 5 Barn. & Adol. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; Lyon v. Fishmongers' Co., L. R. App. Cas. 682, 10 Ch. 679, 44 L. J. Ch. N. S. 747, 33 L. T. N. S. 146, 24 Week. Rep. 1; White v. White, App. Cas. (1906) 72; Race v. Ward, 3 El. & B. 712, 3 C. L. Rep. 744, 24 L. J. Q. B. N. S. 153, 1 Jur. N. S. 704, 3 Week. Rep. 240, 30 Eng. L. & Eq. Rep. 187; City of Syracuse v. Stacey, 169 N. Y. 231, 62 N. Y. Rep. 357; Conger v. Weaver, 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594; County of Sierra v. County of Nevada, 155 Cal. 1, 99 Pac. Rep. 371.

³ Shaw v. Proffitt, 57 Ore. 192, 109 Pac. Rep. 584. See *Id.*, on rehearing, 110 Pac. Rep. 1092.

¹ Inst. Lib. 2, T. 1, Sec. 2.

See, also, for the right of navigation, Chap. 16, Secs. 341-357.

navigation was made worse.² The law went further than the common law in permitting the banks of rivers, although the title to the same was in the adjoining property owners, to be used by the public in navigating the streams; and all persons had the same right to bring their vessels to the land, and to fasten them to the trees growing upon the banks, and to unload them there, as they had to navigate the river itself.³ As was said in the Pandects, rivers which flow perennially are public, and therefore their banks are also public.⁴ The banks of the rivers might be improved and strengthened so long as navigation on that account was not injured, but such improvements were only tolerated when they made no impediment to navigation.⁵ And any person who wanted to strengthen the banks of a public river was compelled to give security against future damages, and this security must be given before the work was done. The same rule applied to the strengthening of the banks of lakes, canals, and ponds. The use of public streams was held common to all, just the same as the public roads and the shores of the sea. In these places it was held to be a public right for any one to build up improvements or to tear them down, provided, however, that this was done without injury to any one else; for, as was held, to build on the banks of a river was allowed by the law of nations, unless the public use is impaired.⁶

It will be noticed that all of the law tends to preserve the rights of the general public, especially in the right of navigation. Even in the case of a lake, which was entirely within the boundaries of a private estate, the right of navigating it was given if it aided in reaching a neighboring estate.⁷ If a stream was navigable no right could be given to divert the water in such quantity that it became less navigable, even if by such act another stream became navigable.⁸ So we can see from this that the ruling of the Supreme Court of the United States in the Rio Grande dam case and the case of *Kansas v. Colorado*, that the navigable capacity of the

² D. 43, T. 12, Sec. 1; Ware, Roman Water Law, Sec. 16.

³ Inst. Lib. 2, T. 1, Sec. 4.

⁴ D. 43, T. 3, Sec. 3.

⁵ D. 43, T. 15, Sec. 1; Ware, Roman Water Law, Secs. 63-68.

⁶ D. 39, T. 2, Sec. 24; D. 43, T. 8,

Sec. 4; Ware, Roman Water Law, Secs. 74, 77.

⁷ D. 8, T. 3, Sec. 23, 1 Par. 1; Ware, Roman Water Law, Sec. 161.

⁸ D. 39, T. 3, Sec. 10, Par. 2; Ware, Roman Water Law, Sec. 275.

navigable waters of the United States must be preserved, has a precedent in the laws of ancient Rome.⁹

§ 558. **Rights of riparian owners based on access.**—The rights of riparian owners, whose lands border on streams and other natural bodies of water did not originate with the common law of England; but these rights were recognized and protected in the days of ancient Rome, and also in the days of the later Roman Emperors. The banks of a river were held to be the property of those whose lands they adjoin, and consequently the trees growing upon them were also the property of the same persons.¹ All riparian rights recognized under the civil law were based on lawful access to the water or other natural bodies of water, which touched or bordered upon the water itself. In other words, the waters, while they continued in the streams, were subject to the common use of all who could legitimately gain access to them for the purposes necessary to the support of life.² This principle also applies to the right to take and use the waters at civil law. This right was in those who are known under the common law as riparian proprietors, because of their legal right of access to the stream.³

It will be seen from a comparison that the rights of riparian owners under the civil and common law are practically the same as originally formed in the civil law and later embodied in the rules of the common law, as discussed in previous chapters of this work.⁴ The rights of the riparian owners under each sys-

⁹ See Secs. 354, 355; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

¹ Inst. Lib. 2, T. 1, Sec. 4.

² *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

³ *Miner v. Gilmour*, 12 Moore P. C. C. 131, 14 Eng. Reprint 861.

See, also, Louisiana Code, Art. 657, wherein it is said: "He whose estate borders on a running water, may use it as it runs, for the purpose of watering his estate or for other purposes. He, through whose estate

water runs, whether it originates there or passes in from lands above, may use it while it runs over his lands; but he can not stop or give it another direction, but is bound to return it to its ordinary channel where it leaves his estate."

See, also, Code Napoleon, Article 644, to the effect that the rights of the use of water of running streams are given only to the riparian proprietors; that is, to the proprietors of the estates contiguous to the flow of the water.

⁴ For the common law, see Secs. 451, 452, 458, 540.

For the rights of riparian owners

tem were based upon a legal right of access to the waters of the stream. In other words, their lands must touch or border upon the stream.⁵

§ 559. **Miscellaneous rights of the owners of the banks.**—As we discussed in the previous section, the right of ownership of the use of the waters of natural streams, under the Roman civil law, was only in those who had lawful access to the waters, or who were the owners of the banks.¹ This is also true under the common law rule.² But, as we have seen, under the civil law the banks were subject to the use of the public in landing from the river, where the same was navigable.³ Where the river changed its course, the old bed became the property of the owners on each side.⁴

But the ownership of the banks of a river or other body of water was subject to certain servitudes, such as the right of others of drawing of water, the watering of cattle, and the digging of sand.⁵ Also, where such fields bordered on large streams, it was permissible for others than the owners to construct dikes and ditches on the land, if they were necessary in order to use the water. If no fixed law governed the fields, ancient custom took the place of law; for in servitudes the rule was followed that, where the servitude was found not to be imposed by law, he who has for a long time exercised the right without force, stealth, or variation was regarded as having a servitude by ancient custom or fixed law. They could not, however, compel a neighbor to build the works on his own land, but the others who claimed the servitude had the right to go upon the land and build them. And a suit might be brought to enforce this right.⁶ The servitude of drawing water might be established, although a public road intervened between the riparian land and the water.⁷ The law of accretions was similar to that of the common law of the present day, a species of property by possession called "*pro suo*," for in

under the civil law, see subsequent Sections, Nos. 559, 564, 566.

See, also, for rule of access under the Mexican law, Sec. 580.

¹ See Secs. 451, 452.

² See Sec. 558.

³ See Secs. 451, 452, 458, 540.

⁴ See Sec. 557.

⁵ D. 43, T. 12, Sec. 1, Par. 7.

⁶ Inst. Lib. 2, T. 3, Sec. 3.

⁷ D. 39, T. 3, Sec. 1, Par. 23; Ware, Roman Water Law, Sec. 78.

⁸ D. 39, T. 3, Sec. 17, Pars. 2-4.

such a manner the possessor owned all those things which he captured in the sea, earth, or sky, or which became his by alluvion. If a river suddenly changed its course to a new channel farther away the riparian owner could not follow the river to its new channel; but if alluvion, little by little, formed on his land, he might follow the river.⁸ If an island formed in a river it did not become the common property, in undivided shares, of those whose estates bordered on the river side, but in definite parts. Each had so much as lay in front of him, measured by a straight line through the island in prolongation of the boundaries of his estate.⁹ The water might be used by the riparian proprietors, but must be used in such a way as not to exhaust the water of public rivers to the injury of the other riparian proprietors. Neither could the course of the water be changed, nor made deeper, nor more constricted, whereby the current became more rapid, to the detriment of those who dwelt adjacent.¹⁰ The riparian owner had the right to build any structure upon the banks, provided the rights of the other owners or the rights of the public were not interfered with. For building on the banks of a river is allowed by the law of nations, unless the public use is impaired.¹¹ Levees, in order to strengthen the banks, might also be built, but could not be so constructed to the damage of those dwelling along the river. This right was to be determined from the facts in each case, and in most cases the utility of the work decided the case.¹² Before permission was granted to build levees the owner was compelled to give a bond against apprehended injury to neighbors and property owners across the river, good for a period of ten years.¹³

It will be noticed from a perusal of the above that many of the common law rights of riparian owners were taken directly from the civil law.¹⁴

⁸ D. 43, T. 20, Sec. 3, Par. 2; Ware, Roman Water Law, Sec. 93.

See, also, for accretions under the common law, Secs. 538, 539.

⁹ D. 41, T. 1, Sec. 29; Ware, Roman Water Law, Sec. 97.

¹⁰ D. 43, T. 13, Sec. 1, Pars. 1-5; Ware, Secs. 43-48.

¹¹ D. 43, T. 8, Sec. 4; Ware, Sec. 77.

¹² D. 43, T. 13, Sec. 1, Par. 6; Ware, Sec. 49.

¹³ D. 43, T. 15, Sec. 1, Pars. 3-6; Ware, Secs. 65-68.

¹⁴ For common law theories of riparian rights, see Chaps. 21-28, Secs. 540-551.

§ 560. **Surface waters.**—We also find that elaborate laws were in force during the time of the Roman Emperors, relative to the protection from surface water, or “rain water,” as it is called in the Pandects. The ancient action of *aquae pluviae arcendae* (*aq. plu. ar.*) might be brought either before or after actual damage had been done, provided that something had been done by the man from which damage was feared; that is, when something was done by the hand of man which caused the water to flow differently than it would flow by Nature; for instance, if the water is made to flow in greater volume, or more rapidly, or more violently, or if restraint caused it to overflow the land of another. However, if water in its natural flow did damage, then the said action did not lie.¹ If, however, the water was forced to a higher level, or drained to a lower level, by any barriers to its natural flow the action would lie.² The action would lie by an upper land owner against a lower owner, lest the water in its natural flow be artificially prevented from flowing through the latter’s field; and by a lower against an upper owner, lest the water is sent down in a manner different from its natural flow.³ There was, however, one act of man excepted from the action, and that was the tilling of the fields in the natural way.⁴

In a subsequent chapter of this work we will discuss more at length the subject of what is technically known as surface water.⁵ Here it will suffice to say that there are two rules in this country adopted by the laws of the respective States relative to surface water and its control. One, the civil law rule, which is to the effect that the rights of the land owners are to be determined by the natural situation of their lands, so that the owner of land at a higher level has a right of an easement over the land of his neighbor below, to have the surface water pass off naturally, and which right the lower owner can not interfere with.⁶ The common law rule recognizes no such easement of the upper owner of lands, but calls surface waters a “common enemy,” which the lower owner may keep from coming from the upper lands, and which either owner may get rid of as best he can. Both rules, how-

¹ D. 39, T. 3, Sec. 1, Pars. 1-5; Ware, Secs. 109-114.

² D. 39, T. 3, Sec. 1, Par. 10; Ware, Sec. 116.

³ D. 39, T. 3, Sec. 1, Par. 13.

⁴ D. 39, T. 4, Sec. 1, Par. 15.

⁵ See Secs. 318, 654.

⁶ See Chaps. 81, 83.

ever, provide to the effect that there must be no artificial accumulation of the water which may be subsequently discharged upon another's lands.⁷

§ 561. **The acquisition of water rights.**—Under the Roman laws a water right, or the right to the use of water, might be acquired or lost for certain reasons. This right might be for the use of the water as it flowed in the stream, or it might be by diverting the same in canals and ditches from the natural streams and conducting it to the place of use. Even in the public rivers this might be done, provided that the navigable capacity was not impaired. The interdiction that nothing be done in a public river whereby the water was made to flow otherwise than as during the summer before was interpreted to apply only to the course of the stream, and not to apply to the quantity of the water flowing therein.¹ However, if the stream was navigable, water could not be taken from it in such quantity as to make the stream less navigable.² Water rights could also be acquired from the public reservoirs and canals, under strict regulations, severe penalties being prescribed for any violations of the regulations, even to the extent of loss of the water right and confiscation of the offender's estates.³ In order to draw water from public reservoirs and canals and other public waters, permission had to be granted by the Emperor, no one else having the authority.⁴ This permission might be given either to the estates or to a person. When given to the estate, it was not extinguished on the death of a person; but, when given to a person, it was extinguished with his death.⁵

A water right whose origin is time out of mind has a duly constituted existence.⁶ So, what were known as ancient water rights were recognized and protected. If it could be proved that a flow of water through certain places was according to "ancient custom," and according to observation it showed usefulness in irrigating certain tracts of land, it was provided that no new innovation against the old form and established custom was permitted.⁷ The

⁷ See Chaps. 81, 83.

¹ D. 43, T. 13, Sec. 1, Pars. 1-3; Ware, Secs. 43-46.

² See Sec. 557; D. 39, T. 3, Sec. 10, Par. 2.

³ C. 11, T. 42, Secs. 2, 3; Ware, Secs. 163, 164.

⁴ D. 43, T. 20, Sec. 1, Pars. 38-45.

⁵ D. 43, T. 20, Sec. 1, Pars. 43-45; Ware, Sec. 184.

⁶ D. 43, T. 20, Sec. 3, Par. 4; Ware, Sec. 281.

⁷ C. 3, T. 34, Sec. 7; Ware, Sec. 253.

amount taken, however, in order to hold an ancient right, was that amount which had been taken by custom and had been used continuously. It will be noticed in our chapter on Irrigation in Italy that these ancient rights are still in force in many of the Provinces of Italy, and that they are an obstacle against the progress of the country.⁸ In order to prove one of these ancient rights, the owner was not compelled to show the title by which the right originated, as if by devise or some other way. The owner also had a right of action against any injury to his right, and in his claim he might set forth the number of years he had been in possession of the use of the water without force, stealth, or variation.⁹

As to the other water rights than those known as ancient, they might be acquired by permission of the Government; and the right of diverting water from the same place in the stream might be given or granted to many persons, and could be granted for different days and different hours.¹⁰ And, if the supply was sufficient, the right might be given to many persons in the same place, as well as for the same day or the same hour.¹¹ The right, however, could not be used for any part of the estate except for which it was acquired. And if a portion of the estate was sold the water right followed the purchaser, in proportion to the area of the part sold and the part kept, regardless of the need of the different portions for the water.¹² The right of diverting water appertained, not to the owner of the land, but to the land itself. Usage was the basis of the right, and this might be for irrigation, watering cattle, embellishment or ornamental works, and beautifying grounds.¹³ The use of the water must be confined to the exact time for which it was granted, and if one had a right to use the water during a certain hour of either day or night, he did not have the right to use the water at any other hour.¹⁴ Severe penalties were provided for the violation of any of these laws, which included forfeiture of all water rights, and even life imprison-

⁸ See Chap. 8, Secs. 144-159.

¹² D. 8, T. 3, Sec. 25; Ware, Sec.

⁹ D. 8, T. 5, Sec. 10; Ware, Sec.

258.

320.

¹³ D. 8, T. 3, Sec. 20, Par. 3; D.

¹⁰ D. 8, T. 3, Sec. 2, Par. 1; Ware, Sec. 254.

43, T. 20, Sec. 3; Ware, Secs. 279, 280.

¹¹ D. 8, T. 3, Sec. 2, Par. 2; Ware, Sec. 255.

¹⁴ D. 43, T. 20, Sec. 2.

ment of the offender, where water was stolen or taken "through furtive channels." ¹⁵

§ 562. Right to the waters of springs.—Water originating in springs in the land of one can not be conducted off without the consent of him to whom the use of the water belonged, whether this was the owner of the land or another.¹ However, the right to the use of the water of a spring could be acquired by grant, or by adverse user. And any violence to him who, adversely to another, had been using the water of a spring as he used it during the past year, without force, stealth, or variation, was especially forbidden.² The right was also given to clean out springs where the right to the use of the water was claimed by adverse possession.³

§ 563. The right to subterranean waters.—If one person in digging in his own land turned away the source of his neighbor's spring, nothing could be done; nor even could an action for fraud be brought, if that which he did was for the purpose of benefiting his own field, and not with the intention of injuring his neighbor.¹ Under this rule all rights to subterranean waters belonged to the owners of the soil. This rule was followed by the common law.² However, the right to discover water on an estate might be granted by the owner of an estate to another, and he, having found it, had the right to convey it away.³ Under the *Partidas*, or the Spanish Code, which had for its basis the civil law of Rome, it was provided that when a man has a fountain or well upon his land, and his neighbor wishes to make one upon his land, in order to procure water for his use, the latter may do it and the former can not prevent him, notwithstanding the water in the first well or fountain may be diminished thereby, unless the person wishing to make the new well has no need of it, and acts maliciously.⁴

15 C. 11, T. 42, Sec. 4; Ware, Sec. 253.

1 C. 3, T. 34, Secs. 4, 6; Ware, Secs. 148, 150.

2 D. 43, T. 22, Sec. 1; Ware, Sec. 141.

3 D. 43, T. 22, Sec. 1, Pars. 6-8; Ware, Secs. 144-146.

1 D. 39, T. 3, Sec. 1, Par. 12; D. 39, T. 3, Sec. 21; Ware, Secs. 154, 155.

2 See Secs. 1201, 1202.

3 D. 8, T. 5, Sec. 21; Ware, Sec. 158.

4 *Partidas*, 3 T. 31; 1 Moreau & Carlton's Translation, 409, 410.

§ 564. **Grants of rights by riparian owners.**—The rule as to the grant of conveyance of water rights by riparian owners either to other riparian owners, or to others, is practically the same in both the civil and common law. As riparian owners under both systems are entitled to an equal or correlative share of the water flowing in the stream which adjoins their respective properties, no one riparian owner may grant his share of the water to another, where the water is consumed and thereby the rights of the other owners are injured. It is also held that all grants of riparian rights are valid as between the contracting parties, but are invalid as between noncontracting parties whose rights are permanently and substantially injured or interfered with.¹ This subject, however, has been fully discussed in previous sections of this work.²

§ 565. **Loss of water rights.**—The Roman water laws provided that a water right might be lost in one of several ways. One who violated the ordinance governing public reservoirs and canals not only lost the water rights which had theretofore been granted him, but also he was severely punished, according to his station in life.¹ Any right might be lost by nonuser for the period prescribed for its loss.² So, also, for using the water in a different manner than that prescribed, the right was forfeited. And, in case of a sale, the time during which the preceding owner did not use it was reckoned up against his successor.³

§ 566. **Use of water for irrigation.**—The use of water for irrigation was amply provided for under the Roman laws, and, of course, in order to irrigate lands the water had to be diverted from its natural channel. Hence the rule that water which springs up

¹ See Digest of Justinian, D. 8, T. 3, Sec. 24; Ware's Roman Law, Sec. 257, where it is said: "From my water right, so Labeo says, I may accommodate any of my neighbors with water; on the other hand, Proculus holds that the water may not be used for any other part of the estate than that for which the right was acquired. The opinion of Proculus is the truer one."

See, also, Hall's Mexican Law, Sec. 1399; Eschriche, Aguas, Sec. 4.

² For grants and contracts of riparian rights, see Chap. 27, Secs. 526-536.

³ C. 11, T. 42, Sec. 3; Ware, Sec. 164.

² D. 8, T. 6, Secs. 7, 10, 16; Ware, Secs. 263-266.

³ D. 8, T. 6, Sec. 18; Ware, Sec. 267; D. 8, T. 6, Sec. 17; Ware, Sec. 153.

in a river bed belongs to him who leads it off.¹ The water might be taken from the river by canals and ditches, or it might be raised from the rivers by wheels, and when the right was once acquired it was preserved to the owner.² Water originating in the land of another could not be conducted off his land to irrigate other lands if it was needed by the owner, unless the right to its use had been lost by nonuser.³ A right might also be granted to take water for irrigation from the public reservoirs and canals.⁴ The use of the water was divided into two classes—"daily" and "summer." Daily water was that which was used continuously, both summer and winter, while the summer water was used only during the irrigation period of each year.⁵ The summer time was defined as beginning at the vernal equinox, March 22, and ending with the autumnal equinox, September 22.⁶ The right to the water was not based upon the acreage, but the use to which the water was put measured the right.⁷ So, under our modern laws of appropriation of water, the use for a beneficial purpose is the culmination of title.⁸ Also, as in our own times, the right to the use of the water might be acquired for different days or for different hours of the day or night.⁹ Specific laws were set forth for the repair of the ditches and canals, and for changes in their location provided no injury was done to others. Violence was forbidden against any one who was repairing or cleaning canals, conduits, or headgates to facilitate the conveying of water, because it was permitted him, although adversely to others, so to do, as long as the water was not conveyed otherwise than it was the last summer, without force, stealth, or variation.¹⁰

§ 567. **Rights of way.**—The right of way for canals and aqueducts over the lands of another was carefully provided for by the

¹ D. 43, T. 20, Sec. 3, Par. 3; Ware, Sec. 40.

² D. 8, T. 4, Sec. 2; Ware, Sec. 91.

³ C. 3, T. 34, Secs. 4, 6, 10; Ware, Secs. 148-151.

⁴ D. 43, T. 20, Sec. 1, Pars. 43-45; Ware, Sec. 184.

⁵ D. 43, T. 20, Sec. 1, Par. 3; Ware, Sec. 188.

⁶ D. 43, T. 20, Sec. 1, Par. 32; Ware, Sec. 216.

⁷ C. 3, T. 34, Sec. 12; Ware, Sec. 226.

⁸ See Secs. 725-728, 877.

⁹ D. 8, T. 3, Sec. 2, Pars. 1, 2; Ware, Secs. 254, 256.

¹⁰ D. 43, T. 21, Secs. 1-11; D. 43, T. 21, Secs. 2, 3; D. 43, T. 21, Sec. 3, Pars. 1-10; Ware, Secs. 229-249.

laws of the Roman Emperors. Also where one had the right of drawing water from a river by grant, the right of way to and from the river was also granted.¹ With the right of way for canals and aqueducts, certain other rights follow: First, the right to repair canals or aqueducts; second, the right of the owner and his workmen to go upon the land to make repairs; third, the right of a strip on each side of the channel to make the repairs, and the right to deposit material for the same.² However, this must all be done without impairing the rights of the servient estate. A right of way could also be acquired by adverse possession through the property of another. And, if one had exercised the right of conducting a flow of water through the property of another with his knowledge, a servitude of a permanent character was, in time, acquired. The time required to secure this right was ten years, if the owner was present and knew of the use, and twenty years if the owner was absent, where it was presumed that he knew of the use. If, however, the right of way was forbidden by the owner, within the periods named, then no right of way could be acquired, and the expenses incurred therefor were in vain, because the ownership of any improvements made on the land of another, as long as it remains in the same estate, belongs to the owner of the land.³

The right is also given under the civil law of condemnation of rights of way for ditches and canals over the lands of others. Where lands border upon streams it was permissible for others than the owners to construct dikes and ditches on the land, if it were necessary in order to conduct the water to the place of use.⁴ Under the later common law this right is also granted, and it is also granted under the laws of all of the respective States of this country. The right granted under the civil law and as it has been carried down to the modern European countries under their form of government is even greater than the right which is granted under the common law, or the statutory laws of this country. Less particularity is exercised in the distinction between private and public rights for which rights of way may be condemned. Then

¹ D. 8, T. 3, Sec. 3, Par. 3; Ware, Sec. 292.

² D. 8, T. 4, Sec. 11, Par. 1.

³ C. 3, T. 34, Secs. 2-4; Ware, Secs. 250-252.

⁴ D. 39, T. 3, Sec. 1, Par. 23; Ware, Roman Water Law, Sec. 78.

again, under the Constitution of the United States and our State constitutions, private property may not be taken even for a public use without just compensation and upon due process of law. Under the civil law the private rights of the individual were not guarded to the extent, in this respect, as are the rights of the individual in this country.⁵

§ 568. **Remedies.**—Not only was the substantive law governing waters fully covered, but also the subjects of remedies and procedure were treated in great detail by the laws of the Roman Emperors. There was an action for damages where property of one was injured by the waters used by another, or by the water breaking out of the reservoirs and canals,¹ or when the flow of the waters is interfered with so that it did not reach the rightful owner.² The measure of damages was to be fixed by an appraisal of the damages by the Judges upon the facts, that is, what damages shall appear to have been inflicted.³ An action might also be brought for anticipated damages called *damni infecti*—threatened damages. This action was to compel the giving of security or a stipulation against anticipated damages in the future.⁴ An action for an injunction, *quod vi*, against the pollution of water;⁵ against the injury from water;⁶ and in this action damages might also be assessed.⁷

There was also a special action which could be brought concerning surface water, and this action embodied almost all the other forms of actions. The action was called "*aquae pluviae arcendae*," and originally only related to actions concerning rain water. But later the scope of the action was extended so as to include nearly all forms of actions, but still being confined to

⁵ For the right of eminent domain, see Chap. 55, Secs. 1059-1098.

¹ C. 3, T. 35, Sec. 2; D. 43, T. 8, Sec. 5; Ware, Secs. 317, 322.

² D. 8, T. 5, Sec. 10, Par. 1; Ware, Sec. 321.

³ D. 39, T. 3, Sec. 6, Par. 8; Ware, Sec. 360.

⁴ D. 8, T. 2, Sec. 18; D. 39, T. 3, Sec. 14, Pars. 2, 3; Ware, Secs. 311, 373, 374.

⁵ D. 43, T. 24, Sec. 11; Ware, Sec. 157; D. 39, T. 3, Sec. 3; Ware, Sec. 342.

⁶ D. 39, T. 3, Sec. 5; Ware, Sec. 351; D. 39, T. 3, Sec. 11, Pars. 6-14; Ware, Secs. 368-371.

⁷ D. 39, T. 3, Secs. 13, 14; Ware, Sec. 370; D. 39, T. 3, Sec. 14, Pars. 1-4; Ware, Secs. 373-375.

the subject of surface waters, it being decided that it did not include hot waters or spring waters, upon the ground that they were not surface waters.⁸ This action might be brought against both the landlord and tenant, or against any other person causing the injury.⁹ The scope of the action included injunction for the wrongful diversion of water so that it was prevented reaching the field of the one to whom it was rightfully entitled.¹⁰ It also might be brought by an upper owner against a lower owner to permit the water to flow down through the lower field as it was wont.¹¹ It also included damages by surface water, when something was done by the hand of man which caused it to flow differently than it would flow by Nature; for instance, if it was made to flow with greater volume, or more rapidly, or more violently, or if restraint had caused it to overflow the land of another.¹² In the judgment in this form of action future damages were also considered.¹³ The action also included the remedy by mandamus, as, for instance, to compel an upper land owner to clean a ditch running through his land to the land of a lower owner;¹⁴ also for the removal of an obstruction to the natural flow of the water, such as dikes, or trees planted to restrain the water;¹⁵ also, if one made trenches from which the water was liable to do damage, the Judge had the power to compel him to fill up the trenches; in all cases, if the defendant refused to obey, the Judge had the authority to sentence him to punishment.¹⁶ In fact, the object of this action seems to have been to adjudicate all subjects appertaining to the flow of surface water and to provide a remedy for the same.

§ 569. Roman laws—Concluding comparisons.—A careful comparison of the water laws of the Roman Emperors, as set forth in

⁸ D. 39, T. 3, Sec. 3; Ware, Sec. 342.

See, also, as to the nature of the action, D. 39, T. 3, Sec. 23, Par. 2, and D. 39, T. 3, Sec. 1, Pars. 1-6, 10, 11, 13-22; Ware, Secs. 79, 109-127.

⁹ D. 39, T. 3, Sec. 22, Par. 2; Ware, Sec. 381.

¹⁰ D. 39, T. 3, Sec. 1, Par. 13; Ware, Sec. 118.

62—Vol. I—Kin. on Irr.

¹¹ *Id.*

¹² D. 39, T. 3, Sec. 1, Pars. 1-6, 10-22; Ware, Secs. 109-127.

¹³ D. 39, T. 3, Sec. 14, Par. 2.

¹⁴ D. 39, T. 3, Sec. 2, Pars. 1-5; Ware, Secs. 330-334.

¹⁵ D. 39, T. 3, Sec. 1, Par. 2; D. 39, T. 3, Sec. 7; Ware, Sec. 361.

¹⁶ D. 39, T. 3, Sec. 24, Par. 2; Ware, Sec. 385.

the Pandects and Institutes of Justinian, a brief abstract of which has been set forth in the preceding sections,¹ with the civil law as adopted and modified by other later nations,² upon the same subject, will show that the laws of the Romans were much more perfect than the laws of the later nations. These Roman laws were adopted for a country which in many portions was hot and arid; and where, in order for the land to produce anywhere near up to its full capacity, irrigation of the soil was necessary. Prior to the codification of the Pandects these laws had been in the process of formation for over 1,000 years. They were therefore well settled and covered every point which was liable to arise upon the subject. The modern doctrine of appropriation of water for beneficial uses more nearly follows the civil law than does the common law, although there are many features of the common law which were taken directly from the laws of the Roman Emperors. For instance, the law upon the subject of riparian rights, with the exception of the right to have the stream run as it was wont by Nature and the use of the water, was, in the main, taken directly from the civil law.³ The law governing surface waters also came from the civil law. As to the use of the water itself, especially by diverting the same from the natural streams and applying it to some beneficial purpose, as, for instance, irrigation, the common law and the civil law are diametrically opposed to each other. This difference can be explained by the fact that the physical features of the two countries were different as respecting the needs of water, especially for irrigation. In England, where the common law originated, water was not needed for irrigation. It was more of a question how to drain the water off the land than how to conduct it on the land. Hence the change in this respect. The modern law of appropriation more nearly follows the civil law than it does the common law, although the common law was adopted in this country, where the same was applicable.⁴ Again, we say this was due to the physical condition of the country. The Western portion of this country being hot and arid, water is necessary to irrigate the soil in order, in many places, that they produce any crops at all. It also will be noticed that even England, in all of her Provinces where irrigation is nec-

¹ See Secs. 553-568.

² See Secs. 571-583.

³ See Secs. 450-551.

⁴ See Secs. 586-594.

essary, in order for the land to produce crops has also discarded the old common law theory that the water must be permitted to flow in its natural channel as it was wont to flow by Nature, and has adopted the rule of the civil law that the water may be diverted from the streams and applied to beneficial purposes. That this is true, see the water laws of India, Egypt, Australia, South Africa, and Canada. In the meantime, in the very country where the civil law originated, there is the most perfect system of laws governing waters, and especially as to that portion used for irrigation, of any civilized country on earth. From this just and equitable system of laws the people of that country have built up an irrigation system that has been the model and example of many countries, including our own.⁵

⁵ See Chap. 8, *Irrigation in Italy*.

See, also, *Irrigation in Italy*, Meade; *Irrigation Laws of Italy*, Meade.

CHAPTER 30.

THE CIVIL LAW IN THE UNITED STATES.

- § 570. Scope of chapter.
- § 571. Brought by the Dutch to New York.
- § 572. Brought by the Spanish to the Southern States.
- § 573. By the Spanish—The Partidas.*
- § 574. Brought by the French to Louisiana—Code of Domat.
- § 575. Brought by the French to Louisiana—Code Napoleon.
- § 576. Brought by the Mexicans to the Western States.
- § 577. The Mexican water laws—In general.
- § 578. The Mexican water laws—Acquisition of private rights.
- § 579. Mexican laws—The acquisition of private rights by way of Government concessions.
- § 580. Use of water not confined to riparian lands.
- § 581. The Mexican water laws—Pueblo rights—The plan of Pictic.
- § 582. The Mexican water laws—Pueblo rights—Right to extend the use of water to territory annexed to pueblos.
- § 583. The Mexican water laws—As affecting the rights to water on Mexican land grants.
- § 584. Conclusions.

§ 570. **Scope of chapter.**—In the preceding chapter we discussed the Roman civil law as its principles were applied to the subject of waters in the various countries of the Old World, and from the time of the ancient days of Rome to the days of the Roman Emperors. In the present chapter we will discuss how, through various sources, the civil law has been brought to this country and its principles are now embodied in many respects in the jurisprudence of many sections of the United States. It was brought by the Dutch to New York,¹ by the Spanish to many of the Southern States,² by the French to Louisiana, and by the Mexicans to that portion of the country which now includes the majority of the States of the arid West.³ It is more with the latter section of the country with which we have to deal. And we will endeavor to show how the civil law as modified by the Spanish and Mexicans has left its impress upon the laws governing the waters in many portions of the West.

¹ See Sec. 571.

³ See Secs. 574, 575, 576-584.

² See Secs. 572, 573.

§ 571. **Brought by the Dutch to New York.**—The civil law upon the question of waters was brought to this country by the Dutch, when they settled New York, and its influence is still felt in that State. This State was one of the original States of the Union and was the first part of the United States that had been formerly governed by the civil law. However, as we in this work have very little to do with the question of waters in the State of New York, our discussion upon this subject will be very brief. The civil law of the Dutch was superseded by the common law, when the English acquired possession of New Amsterdam, as it was then called. The question relating to waters first arose in regard to the title of the beds of navigable nontidal streams, whether the beds of these streams were in the public, according to the American interpretation of the civil law in this respect,¹ or whether the common law prevailed and the title to the beds of these streams was in the riparian owners.² The question was finally settled that in the valleys of the Hudson and Mohawk Rivers the titles granted to the original Dutch settlers, as construed by the rules of the civil law then prevailing in the Netherlands, did not convey to the riparian owners the banks or beds of any navigable streams; and, upon the surrender of this territory by the Dutch, the guaranty assured by the English authorities to its inhabitants of the peaceable enjoyment of their possessions simply confirmed the right already possessed, and the beds of the navigable streams, never having been conveyed, became vested in the English Government as ungranted lands, and the State of New York, as a consequence of the Revolution, succeeded to the rights of the mother country.³ It was afterward held that a riparian proprietor having a patent from the Dutch, and having

¹ See *Canal Appraisers v. People*, 17 Wend. 571, *Lockwood's Rev. Cas.* 51; *Angell on Tidewaters*, Appx. 223.

But it seems that even the Dutch had trouble in deciding this question. Vinnius, one of the leading Dutch authorities, asserts that by the Roman law the title to the beds of navigable rivers was in the riparian owners, subject to the easement of the public of passage and of mooring on the banks. Vinnius, *Justinian*, Secs. 2, 4.

See, also, *Lorman v. Benson*, 8 Mich. 18, 77 Am. Dec. 435.

² For common law rule as to title to beds of non-navigable streams, see Secs. 537, 541, 542.

³ *Smith v. Rochester*, 92 N. Y. 463, 44 Am. Rep. 393; *People v. Canal App.*, 33 N. Y. 461; *People v. Page*, 39 App. Div. 110, 56 N. Y. Supp. 834.

afterward secured one also from the English King, owned the bed of a navigable nontidal stream. In other portions of New York, where the title was derived wholly from the English, it is held that the beds of the streams are in the riparian owners.⁴

§ 572. **Brought by the Spanish to the Southern States.**—The civil law was also brought to this country by the Spanish, who settled in that portion of the country which now forms some of the Southern States. Upon the subject of waters, however, it was brought in a somewhat modified and much inferior form from the law of the Roman Emperors, discussed in previous sections of this work.¹ The history of this modification is that in the year 1256 A. D. King Alfonso IX gave a royal order to certain eminent lawyers to compile and codify the laws of Spain. The order was complied with, and seven years later what are known as "The Seven Partidas" were published as an original work. They are, however, nothing but a poor compilation of the Pandects, that great codification of all the laws of the Romans, made under the authority and direction of the Emperor Justinian, the principal features of which, concerning waters, have been discussed in the previous chapter.² The Partidas, however, became the law in Spain, and continued in force down to and after the time of the discovery of America; and, of course, were brought to this country direct from Spain by the Spanish, who settled in Florida and other Southern States. By this means the civil law found its way to another portion of this country and left its influence there, which is still felt in many respects. We will now discuss the principal features of the Partidas governing waters.³

§ 573. **By the Spanish—The Partidas.**—The Partidas of the Spanish upon the subject of waters are very meager, and embody

⁴ See title to the beds of streams, Secs. 328-332.

See, also, Canal Fund Comrs. v. Kempshall, 26 Wend. 404.

¹ See Secs. 552-569.

For the general law governing waters in other Spanish-American countries, including Guatemala, Chile, Co-

lombia, Uruguay, see Walton's Civil Law in Spain and Spanish America, 1900, Secs. 407-425, 552-563, 586-588.

² See Secs. 553-569.

³ See translation of the Partidas, by L. Moreau Liset and Henry Carleton, 1820; Ware, Roman Water Law, 1905.

only the most fundamental principles. They declare that things belonging, in common, to all the living creatures of the world are the air, rain, water, the sea and its shores; and every creature may use them according to his wants.¹ It will be noticed that this statement goes further than the Roman law, which was confined to *running water*. Also the last expression, "and every creature may use them," is added. This is considered, in the famous English case of *Mason v. Hill*, as an incorrect statement of the civil law upon the subject.² This is undoubtedly true as to the Roman law upon the subject as embodied in the *Pandects*, and *Institutes of Justinian*,³ but it is also true that the above statement is correct as adopted by royal authority in the *Partidas of Spain*, and that the same was brought to America by the Spaniards. It is further declared that rivers, ports, and public roads belong to all men in common.⁴ This rule was even carried to the extent that it was also held that strangers coming from foreign countries may make use of them in the same manner as the inhabitants. The banks of the rivers belonged to the owners of the estates touching upon the water, although, as under the Roman law, they might be made use of by those navigating the streams.⁵

The right of navigation was also protected, and any obstruc-

¹ P. 3, T. 28, Sec. 3; Ware, Sec. 395.

Cocas comunes are defined as those "*qui sirven a los hombres y demas vivientes como el aire, el agua, llovadura, el mar y sus riberas.*" *Febrero Novissimo*, T. 1, Lib. 2, Sec. 1; *Lux v. Haggin*, 69 Cal. 316, 10 Pac. Rep. 674.

² See *Mason v. Hill*, 5 Barn. & Adol. 1, 5 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692.

See, also, *Liggins v. Inge*, 7 Bing. 692, 5 Moore P. C. C. 712, 9 L. J. C. P. 202.

³ See, for the rule of the civil law, Secs. 288, 555.

⁴ P. 3, T. 28, Sec. 5; Ware, Sec. 396.

⁵ See Sec. 557.

That this portion of the Spanish law has its influence as far north as Missouri, see the case of *O'Fallon v. Daggett*, 4 Mo. 343, 29 Am. Dec. 640, where the Court held that a grant of land by a government must be interpreted by the law of the country in force at the time when it was made, and therefore a grant made by the King of Spain of land bordering on a river must be interpreted by the Spanish law then in force; and that banks of navigable rivers, granted to private owners, may, by the Spanish law, be used by navigators for the purpose of landing, fastening, and repairing vessels, but they can not obstruct the owner's enjoyment thereof beyond the reasonable limits of necessity.

tions to the same might be removed and destroyed.⁶ The law of accretions was practically the same as the rule of the Roman law.⁷ In no place is it provided how the water might be acquired and used for irrigation or for other purposes by individuals, but it was evidently so used, as it was provided that estates might serve one another by receiving aqueducts or other conduits for water to pass to mills, or to water gardens, or other estates of other persons. Provisions were also made as to how these conduits must be constructed, and for their care, in order that they do no damage to the dominant estate.⁸ The law of surface waters was similar to that of the Roman law.⁹ The erection of any new works by which damage was done to another's estate by the flow of water might be demolished.¹⁰ If one by digging upon his own land destroyed a well or spring upon the land of his neighbor, the latter could not prevent him or recover damages unless it was done maliciously.¹¹ In the *Partidas* upon the subject of subterranean waters it was provided, as follows: "When a man has a fountain or well in his house, and his neighbor wishes to make one in his house likewise in order to procure water for his use, the latter may do it, and the former can not prevent him, notwithstanding the water in the first well or fountain may be thereby diminished, unless the person wishing to make the new well has no need of it and acts maliciously."¹²

§ 574. Brought by the French to Louisiana—Code of Domat.—The civil law in this country had another source than those named in the previous sections, and that was through the French in their settlement of Louisiana; and up to the time of the Louisiana Purchase it was the governing law, somewhat modified to fit French conditions, and of that great section of this country acquired from France. The civil law has left its impress in many ways in this

⁶ P. 3, T. 28, Secs. 6-8; Ware, Secs. 396-398.

⁷ See Sec. 559.

⁸ P. 3, T. 31, Sec. 4; Ware, Sec. 405.

⁹ See Sec. 560.

See, also, Chaps. 81, 83.

¹⁰ P. 3, T. 32, Sec. 17; Ware, Sec. 413.

¹¹ P. 3, T. 32, Sec. 19; Ware, Sec. 415.

¹² 1 Moreau & Carlton's Translation of the 3 *Partidas*, T. 31.

See, also, for the Diversion of Subterranean Waters, Influenced Through Malice, Secs. 1201, 1202.

section of our country. The history of the civil law of France is somewhat similar to that of Spain. It, too, had its codifiers, who collected the Roman laws and changed them so as to fit the conditions of France. Domat in 1694 was the first to undertake this work.¹ In this work we find that rivers, the banks of rivers, and highways are things public, the use of which is common to all persons, according to the respective laws of the countries. And these kinds of things do not appertain to any particular persons, nor do they enter into commerce, but it is the sovereign that regulates them. This law, especially as to the use of the banks of rivers, is still followed in Louisiana. In that State the public have a right of way along the banks of all navigable waters and the right to use them for any purpose connected with navigation, and the riparian owner can make no use of the banks or shore which will interfere with this public right.² We also find in Domat that the right to the water of springs on the land of another was provided for.³ Also that the water of streams might be conducted from one piece of ground to another in aqueducts either above or below ground.⁴ Nonnavigable streams are declared to be the property of the particular persons whose lands they cross.⁵ The law upon the subject of surface waters was declared to be that he who has the upper grounds can not change the course of the water, either by turning it some other way, or rendering it more rapid, or making any other changes in it to the prejudice of the owner of the lower grounds. Neither can he who has the lower estate do anything which may hinder his grounds from receiving the water which they ought to receive from the estates above.⁶ The law of accretion is also provided

¹ See Cushing's Edition of Domat, 1850.

² See Domat, Cushing's Ed., 1 Vol. 150; Henderson v. New Orleans, 3 La. 563; McKeen v. Kurfast, 10 La. 523; Shepherd v. Third Municipality, 6 Rob. (La.) 349, 41 Am. Dec. 269; Pickles v. McLellan Dry Dock Co., 38 La. 412; Watson v. Turnbull, 34 La. 856; Gleisse v. Winter, 9 La. 149; Hanson v. Lafayette, 18 La. 295; Bourg v. Niles, 6 La. 77; De Ben v. Gerard, 4 La. 30; Sweeney v. Shakes-

peare, 42 La. 614, 7 So. Rep. 729, 21 Am. St. Rep. 400; New Orleans v. Magnon, 4 Mart. (La.) 3.

³ Domat, I Vol. 443; Ware, Sec. 5.

⁴ Domat, I Vol. 443; Ware, Sec. 5.

⁵ Domat, I Vol. 590; Ware, Sec. 5.

⁶ Domat, I Vol. 616; Ware, Sec. 5.

See next section for rule under Code Napoleon.

See, also, Jordan v. Benwood, 42 W. Va. 312, 26 S. E. Rep. 266, 36 L. R. A. 519, 57 Am. St. Rep. 859.

See, also, Louisiana Code, Art. 656;

for similar to that of the Roman law.⁷ It will be noticed that under the French civil law there are no provisions for the irrigating of lands. However, at the time of Domat irrigation was practiced in France.⁸

§ 575. **Brought by the French to Louisiana—Code Napoleon.**—France later had another codification of its laws, under the Emperor Napoleon, and the civil law that was in force at the time of the Louisiana Purchase was this code. Although little is said in this code relative to the rights in fresh water rivers and streams, and the question of irrigation, there is more than there is in the Domat code.¹ It is provided that he whose property borders on or is intersected by running water may employ it in its passage for the watering of his property, but, on condition of restoring it at the boundaries of his field to its ordinary course. If a dispute arose between proprietors who used the water the Courts had the authority to render judgment settling such disputes, and might reconcile the *interest of agriculture* with respect to other property rights. In all cases particular and local regulations on the appropriation, course, and the use of waters must be observed.²

It will be noticed that the appropriation and diversion of water was left to local custom. It will be also noticed that no right was given under the law as abstracted above for the use of waters on lands other than those owned on the borders of the streams. This is also the construction of eminent French writers upon the passage that the rights granted were only to those whose estates

Little Rock & Ft. S. R. Co. v. Chapman, 39 Ark. 463, 43 Am. Rep. 280.

⁷ Domat, I Vol. 856; Ware, Sec. 5.

⁸ See Irrigation in France, Chap. 9, Sec. 161.

For the French civil law, as set forth in the Code Napoleon, see Sec. 575.

¹ See Sec. 574.

² Code Napoleon, Secs. 644, 645; Ware, Sec. 6.

See, also, the Louisiana Code, which has come down from the Code Napo-

leon, Art. 657, of which is as follows: "He whose estate borders on running water may use it as it runs for the purpose of watering his estate, or for other purposes. He through whose estate water runs, whether it originates there, or passes from the lands above, may make use of it while it runs over his lands; but he can not stop or give it another direction, and is bound to return it in its ordinary channel where it leaves his estate."

bordered or were contiguous to the flow of the stream.³ In this respect the civil law does not seem substantially different from the later construction of the common law, where the water may be diverted from the natural channels and used for irrigation or for other useful purposes.⁴ The law also provided for surface waters in making the lower lands servient to those above. The proprietor above, however, could do nothing where the natural servitude due by the estate below might be rendered more burdensome; neither could the proprietor below build any obstruction which would prevent the natural flow of the water.⁵

§ 576. **Brought by the Mexicans to the Western States.**—There is still another source by which the civil law was brought to this country and that was by the Mexicans, who brought it to that great area of territory including the whole of the Western portion of this country ceded to the United States by the Treaty of Guadalupe Hidalgo, the territory acquired by the Gadsden Purchase, and the State of Texas. By the civil law we do not mean the civil law in its purity as we find it in the Pandects and Institutes of Justinian,¹ but that law the basis of which was the civil law of the Roman Emperors, which had been modified by the Partidas and other laws of Spain to fit Spanish conditions,² and which had been still further modified by the Mexicans to fit Mexican conditions.³

The various laws enacted and promulgated, at different periods from the time of the Spanish settlements in America, for the government of the Indies and Mexico, in the form of *cédulas*,⁴

³ "Les droits d'usage mentionnés en l'art 644 ne sont accordés qu'aux riverains, c'est-à-dire, aux propriétaires de fonds contigus au cours d'eau. Droit Civile Français, by Aubrey & Rau, 4th Ed., Vol. 3, p. 47.

⁴ For irrigation under the common law, see Secs. 498-525.

See, also, Yale on Mining Claims and Water Rights, p. 153.

⁵ Code Napoleon, Sec. 640.

See, also, Little Rock & Ft. Smith R. Co. v. Chapman, 39 Ark. 463, 43

Am. Rep. 280; Jordan v. Benwood, 42 W. Va. 312, 26 S. E. Rep. 266, 36 L. R. A. 519, 57 Am. St. Rep. 859.

Louisiana Code, Arts. 656, 657.

¹ See Secs. 553-569.

² For the Partidas, see Sec. 573.

³ For Irrigation in Mexico, see Chap. 9, Sec. 175.

⁴ *Cédulas* were orders emanating from a superior tribunal, promulgated in the name and by the authority of the sovereign.

decretos,⁵ *resoluciones*,⁶ *reglamentos*,⁷ *ordenamientos*, and *pragmáticas*,⁸ were collected and codified under the order of Philip IV and published in 1861. These, with the *Partidas*,⁹ then in force, governed the Spanish-American Colonies and Provinces down to the year 1787, when a Mexican Judge, Don Eusebio Ventura Beleña, published at the City of Mexico his work entitled, "*Recopilacion Sumaria de todos los Autos Acordados de la Real Audiencia y Sala del Crimen de esta Nueva España*," etc. This work, although not official, is constantly quoted and relied upon as unquestionable authority, and contains all the laws governing the Indies and Nueva España, or Mexico, in force at that date, not contained in the *Partidas*. The laws of Mexico alone, prior to 1787, may be found in the work of Beleña, and from that date to the year 1821, the date of the independence of Mexico, in the "*Collección de los Decretos y Ordenes de las Cortes de España, que se reputan vigentes en la Republica de los Estados Mexicanos*," which was published by authority in the City of Mexico in 1829. From the time of the independence of Mexico down to the present time Mexico has been governed by its constitution and the laws enacted by the Mexican Congress for the government of that country. But the basis of the Mexican laws is the civil law of the Roman Emperors. This was modified by the Laws of Spain as set forth in the *Partidas* of 1256, and further modified by the subsequent laws of Spain down to the independence of Mexico, and then again modified by the constitution and laws of the Republic of Mexico down to the year 1848, the date of the Treaty of Guadalupe Hidalgo and the date that this great Western country was ceded to the United States.

Thus the civil law of the Roman Emperors, through the various sources named in this section and in preceding sections, became the fundamental law upon certain subjects regarding waters. And here it is opportune to say that it is not only the written laws of Mexico, as found in the books, which were transmitted to this country, but also the local customs in acquiring water rights and the uses of

⁵ *Decretos* were similar orders in ecclesiastical matters.

⁶ *Resoluciones* were opinions formed by some superior authority on matters referred to it for decision.

⁷ *Reglamentos* were written instructions given by competent authority.

⁸ These were orders emanating from the king.

⁹ For the *Partidas*, see Sec. 573.

water. We will now discuss the influence that the Mexican laws have had upon the laws now in force governing waters in all the territory of this country which formerly was a portion of Mexico.¹⁰

§ 577. **The Mexican water laws—In general.**—Under the civil law, as it was enforced by the Roman Emperors, the waters of non-navigable streams were subject to the common use of all who could legally gain access to them for all purposes to support life; this use also included the diversion of the waters from their natural channels for the purpose of irrigation.¹ The right of access was generally regarded to include only the right of those who owned lands touching upon the water, or those who, under the common law, are deemed riparian owners. The right to the use of the water was also confined to the riparian lands.² As was said in the case of *Lux v. Haggin*, relative to the right of access or to the rights granted by access under the Mexican law, "The waters of innavigable rivers, while they continued such, were for the common use of all who could legally gain access to them for purposes necessary to the support of life."³ By the time the civil law had been sifted down through the various transformations down to the Government of Mexico, at the time of the Treaty of Guadalupe Hidalgo, the civil law rules upon the subject of waters had been modified in a number of ways. Under the Mexican law at this period the rivers and streams belonged to the nation, the use of the waters to the inhabitants in common. That is to say, as long as the waters were flowing in their natural channels they were "*publici juris*," "*res communes*," "*bonum vacans*," or the common property of all the inhabitants. In this state or condition no individual owned the *corpus* of the water.⁴

¹⁰ For the Mexican legislation from the date of independence to the present time, see the *Recopilacion de Leyes Mexicanas*, by Dublan and Lozano.

¹ See Sec. 566.

² See Sec. 558.

³ *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁴ For the ownership of the water itself, see Secs. 288, 289, 555.

As to the meaning of "*publici juris*," etc., see *Mason v. Hill*, 5

Barn. & Adol. 1, 2 Nev. & M. 747, 2 L. J. K. M. N. S. 118, 110 Eng. Reprint 692; *Embrey v. Owen*, 6 Exch. 352, 20 L. J. Exch. N. S. 212, 15 Jur. 633; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Vansickle v. Haines*, 7 Nev. 249, 15 Morr. Min. Rep. 201; *United States v. Conrad Inv. Co.*, 156 Fed. Rep. 123; affirmed, 161 Fed. Rep. 829, 88 C. C. A. 647; *Liggins v. Inge*, 7 Bing. 692, 5 Moore P. C. C. 712, 9 L. J. C. P. 202;

However, according to the Mexican law, the Mexican Government possesses the power of retaining the waters in their natural channels; or, by way of convenience, of conferring the exclusive use of a portion or the whole of the waters of a certain stream to individuals or corporations upon such terms and conditions and with such limitations as it saw fit to establish by law, and that, too, whether they were riparian owners or not. It was, however, the policy of the Mexican Government to foster and protect navigation, and the laws prohibited any diversion or obstruction of the waters of a river by riparian proprietors or others which would impair or interfere with the navigation of streams. Also in this respect the Mexican law followed the civil law and permitted the use of the banks of rivers by those who used the streams for their navigation.⁵ In a number of respects, however, rights were acquired in Mexico which were a departure from and at variance with the ancient civil law rules. Among these was the exclusive right which might be acquired in the waters of a stream to irrigate nonriparian lands. Others were the rights acquired by pueblos, known under the Mexican law as "pueblo rights."⁶

The United States took this portion of the country from Mexico with these rights in full force, and they have ever afterward exercised a powerful influence upon the laws governing waters, especially in the Southwestern portion of our country. We will now take up these various rights which were acquired under the Mexican laws in that portion of the country afterward acquired by the United States and endeavor to trace their influence upon the modern laws in force in the Western part of this country, and especially as relating to the Arid Region Doctrine of appropriation of water for useful purposes.⁷

Williams v. Moreland, 2 Barn. & C. 910, 107 Eng. Reprint 620; Manning v. Wasdale, 5 Ad. & E. 758, 1 Nev. & P. 172, 2 H. & W. 431, 6 L. J. K. B. N. S. 59; Wood v. Waud, 3 Exch. 748, 18 L. J. Exch. N. S. 305, 13 Jur. 472; Elliot v. Fitchburg R. Co., 10 Cush. (Mass.) 191, 57 Am. Dec. 85; Cary v. Daniels, 8 Met. 466 (Mass.), 41 Am. Dec. 532; Tyler v. Wilkinson, 4 Mason 397, Fed. Cas. No. 14,312;

Morton v. Solambo, 26 Cal. 533, 4 Morr. Min. Rep. 463.

⁵ For the use of banks at civil law, see Secs. 554, 557.

For the Right of Navigation in the United States, see Chap. 16, Secs. 341-357.

⁶ See, for Pueblo Rights, Secs. 581, 582.

⁷ For the Arid Region Doctrine of Appropriation, see Chaps. 31-40.

§ 578. **The Mexican water laws—Acquisition of private rights.**—We find that under the Mexican law an exclusive right to the use of a part or the whole of the waters of nonnavigable streams might, under certain circumstances, be legally acquired by individuals for their own private use. The Mexican law permitted diversion from the rivers and streams not navigable, and by those who were not riparian owners, and for the irrigation of lands not riparian. As was held by the Supreme Court of the United States in a recent decision,¹ in adopting the language of the Territorial Court: "Whatever may have been the general law throughout the Republic of Mexico on the subject of water, it is reasonably certain that in the State of Sonora the doctrine of appropriation, as now recognized, was to some extent in force by custom. In this Territory irrigation was practiced in the Santa Cruz Valley prior to the cession, and it is well known that the right of appropriation, without regard to the riparian character of the lands, was there in force probably from the time when the Spaniards first settled in the valley."² Again, the Spanish law in some respects followed the civil law of riparian rights, and it was provided that, "If water passes between estates of different owners, each one of these can use it for irrigation of his estate or for any other object, but not the whole of it, but only the part which corresponds to him, because both have equal rights and the one can consequently oppose use of it all by the other, or even a part considerably more than his own."³

In order to acquire private rights to the use of water, the individual so seeking the same must have been the owner of the land, not necessarily, however, upon the border of the stream. As was said in an Arizona case:⁴ "Arizona, prior to its organization as a Territory, constituted a part of the Territory of New Mexico, but originally, and before the annexation under the Treaty of

¹ *Boquillas Land & Cattle Co. v. Curtis*, 113 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493. For same below, see 11 Ariz. 128, 89 Pac. Rep. 504.

² For irrigation laws of Arizona, see Part XIV.

For irrigation laws of New Mexico, see Part XIV.

See, also, Eschriche, Tit. "Ace-

quia"; see, also, "Aguas" and "Rio"; *De Baca v. Pueblo of Santo Domingo*, 10 N. M. 38, 60 Pac. Rep. 73; Mexican Code, 1870, Arts. 1065, 1069, 1073; Mexican Code, 1884, Art. 966.

³ Hall's Mexican Law, Sec. 1391.

See, also, for the Code Napoleon upon the same subject, Sec. 575.

Guadalupe Hidalgo and the subsequent purchase, under the Gadsden Treaty, of that part of the Territory lying south of the Gila River, constituted a part of the State of Sonora. The first legislation by the Territory followed closely the old Spanish and Mexican laws upon the subject of water rights, as these had been incorporated in the statutes of New Mexico. Under these Mexican and Spanish laws, enforced in the State of Sonora, the *holding of land was the basis* for any valid appropriation or use of water from a public stream. The community ditch or 'public acequia,' as termed in the Howell Code, was the usual and ordinary means for the diversion of water. Each village or group of farmers constructed its own common ditch. The management and control of this ditch was regulated by law, and not by the agreements and contracts of the users of water under it. Such ditches were recognized and treated as public property, in much the same way that a public road under our laws is regarded. Hence every *land owner* under it, whether he used water or not, was required to contribute his quota of labor in the maintenance and preservation of the ditch." ⁵

§ 579. **Mexican laws—The acquisition of private rights by way of Government concessions.**—Under the laws of Mexico the Government had a strong supervisory power. It had the power of retaining the waters in their natural channels, or by way of concessions permitting the exclusive use of the waters to individuals and corporations for the purpose of irrigation or other uses, upon such terms and conditions, and with such limitations as it saw fit to establish by law.¹ The Government had the power to concede private rights to the exclusive use of the waters of non-navigable streams, even if the consequence should be the entire deprivation of the common use by the public in general. Those who appropriated and diverted the waters of a nonnavigable stream in accordance with the laws of Mexico, of course, obstructed to that extent the common use. No one had any exclusive right in or to the water until he had complied with the conditions which

⁴ Slosser v. Salt River Valley Canal Co., 7 Ariz. 376, 65 Pac. Rep. 332.

⁵ See, also, Hagerman Irrigation Co.

v. McMurry, — N. M. —, 113 Pac. Rep. 823.

¹ Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

authorized him to appropriate it. Upon the other hand, every one who had complied with the conditions imposed by the Government, in the appropriation and use of the water, acquired a vested right in such water, at least while he continued to use it, except in the single case where he merely acquired a conditional right. It has been held that where one had acquired the right to the exclusive use of a portion of the waters of a stream under the Mexican law, he can not be deprived of his right by the laws of a State or Territory of the United States after the cession of his lands to the United States.²

It seems that it was not the policy of the Mexican Government to make grants of these exclusive rights to waters. But a private right to the exclusive use of the waters could be acquired under the Mexican law by prescription, or on compliance with the established conditions. It will be noticed that this rule is similar to the rule of appropriation in vogue in the entire portion of this country acquired from Mexico. And, although neither in the civil law nor in the Mexican law is there any mention of an acquisition of an exclusive water right based upon priority of appropriation, both the Mexican law and the original civil law, before it was modified by the laws of Spain and Mexico, are followed by the modern law of appropriation for beneficial uses or purposes to a far greater extent than is the common law of England. The question of exclusive rights by a priority of appropriation forming its basis was an innovation in the law of waters adopted by the settlers of this Western country after the territory was acquired from Mexico; and, therefore, it might be termed a modification of the Mexican law as to the use of waters, incorporated into our own laws by the Treaty of Guadalupe Hidalgo.³

§ 580. Use of water not confined to riparian lands.—Under the Mexican laws the use of water from the natural streams was not confined to lands which were strictly riparian thereto, but this use was extended to other lands, subject to the regulation and control of the public authorities. In the case decided by the Supreme Court of the United States of *Gutierrez v. Albuquerque*

² *Lux v. Haggin, supra.*

See, also, Mexican grants, Sec. 583.

³ For priority of appropriation, see Secs. 776-782.

63—Vol. I.—Kin. on Irr.

Land & Irrigation Co.¹ it was conceded by both sides that, by the laws of Mexico in force when the Territory of New Mexico was ceded to the United States, the use of waters of both navigable and nonnavigable streams was not limited to riparian lands, but extended as well to lands which did not lie upon the banks of rivers and streams, and that such use was subject to be regulated and controlled by the public authorities. However, the diversion from the navigable streams was only permitted when it did not interfere with navigation.² And, in the recent case decided by the Supreme Court of New Mexico of Hagerman Irrigation Co. v. McMurry,³ it was said: "Indeed, riparian ownership, as known to the common law, has never, it would seem, been recognized in New Mexico. As pointed out in *Gutierrez v. Albuquerque L. & I. Co.*,⁴ by the Mexican law in force here at the time the United States acquired the territory, the use of the water of the streams was not limited to riparian lands, but extended to others, subject to regulation and control by the public authorities. And the Mexican law, as well as the law of Indian tillers of the soil who preceded the Spaniards here, as it may be gathered from the ruins of their irrigation systems, did but recognize the law of things as they are, declaring that such must of necessity be the use of the waters of streams in this arid region."

§ 581. **The Mexican water laws—Pueblo rights—The plan of Pictic.**—Another feature of the Mexican laws upon the subject of waters, based upon the civil law as modified by Spanish and Mexican authorities, and which was transmitted to this country by the Treaty of Guadalupe Hidalgo, the acquisition of Texas, and the Gadsden Purchase, was the right of pueblos or agricultural villages. There are many cities and towns in the Southwestern portion of this country, especially in California, Texas, Arizona, and New Mexico, which were founded as Mexican pueblos. They originally differed from our municipalities in many respects. They had no charters, and were always subject to the control and su-

¹ 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming 10 N. M. 177, 61 Pac. Rep. 357.

² See, also, *Lux v. Haggin*, 69 Cal.

255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

³ — N. M. —, 113 Pac. Rep. 823.

⁴ 188 U. S. 545, 23 Sup. Ct. 338, 47 L. Ed. 588.

pervision of superior officers of the Mexican Government, and this control was complete and constant. These officers could suspend, restrict, or enlarge the powers of the officers of the pueblos. These pueblos also constituted instrumentalities for the government of the neighboring country; and in many instances their jurisdiction extended over a large area of territory.¹ No grants of land were ever made to the pueblos by the Mexican Government, but as soon as a pueblo was organized it became entitled to have certain lands set apart to it for its use and the use of its inhabitants. This right was held by the cities and towns of Spain for a long period before her conquests in America, and was recognized in her laws and ordinances for the government of her colonies here.²

At first the plan for the establishment of these pueblos was for the King of Spain, in each case by special ordinance, to provide for the foundation of the pueblo, and to set apart for the use of the pueblo and its inhabitants a certain area of land, and to prescribe in the ordinance the rights of the pueblo and its inhabitants to the use of the waters flowing to those lands. Later, upon the establishment of the pueblo of Pictic in the State of Sonora, sixteen square leagues of land were thus set apart for the use of the pueblo and its inhabitants, and it was further provided:

"7th. The neighbors and natives shall likewise enjoy the use of the woods, water, and other benefits from the royal and vacant lands lying outside of the tract assigned to the new town, jointly with the residents and natives of the immediate and adjoining towns; which favor and right shall continue until by His Majesty the same shall be granted or alienated; in which case regulations will be made according to the provisions for concessions in favor of new possessors or proprietors."

And, further, it was also at this time provided by the King, by general ordinance, that thereafterward the provisions and rights granted and the general plan followed in the foundation of the

¹ *Vernon Irr. Co. v. Los Angeles*, 106 Cal. 237, 39 Pac. Rep. 762; *Hart v. Burnett*, 15 Cal. 530; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

² *Law of the Indies*, in *White, Recop.*, Vol. II, 44; *Brownsville v. Ca-*

vazos, 100 U. S. 138, 25 L. Ed. 574; *Stevenson v. Bennett*, 35 Cal. 432; *Townsend v. Greeley*, 72 U. S. 5 Wall. 326, 18 L. Ed. 547; *Grisar v. McDowell*, 73 U. S. 6 Wall. 363, 18 L. Ed. 863.

pueblo of Pictic should be followed in the foundation of any new pueblos in the jurisdiction of the commanding general of the internal Provinces of the West, of which California, Arizona, New Mexico, and Texas constituted a part. This scheme for the foundation of the pueblos we will designate as the "Plan of Pictic."³ Relative to its right to waters under the Mexican law a pueblo, as a quasi corporation, had the power to distribute to the common lands and to its inhabitants the waters of a non-navigable stream on which the pueblo was situated. And our Courts have determined that the cities and towns in this portion of the country, where they were the successors of these pueblos, held the pueblo lands and waters in trust for the inhabitants, and that the legislatures of the respective States and Territories, as successors to the Mexican Government, can control the execution of this trust.⁴ And this pueblo right to the use of water, or the right of all the inhabitants in common within the jurisdiction of the pueblo, was superior to the individual rights of appropriators, and also superior to the rights of the riparian proprietors, through whose fields the stream ran.⁵

³ For a discussion as to the foundation of the pueblo of Nuestra Señora Reina de Los Angeles, in 1781, which pueblo embraces four square leagues of land included in and is now a part of the present City of Los Angeles, and where it was claimed before the commissioners under the Act of Congress of March 3, 1851 (9 Stat. L. 631, Chap. 41), that the Plan of Pictic should have been followed as to the area granted, but where the commissioners allowed but four square leagues, see *Los Angeles Milling Co. v. Los Angeles*, 217 U. S. 217, 514 L. Ed. 736, 30 Sup. Ct. Rep. 452; Dis. writ of error to the Supreme Court of California, 152 Cal. 645, 93 Pac. Rep. 869; *The Pueblo Case*, 4 Sawy. 563; *Feliz v. Los Angeles*, 58 Cal. 73; *Elms v. Los Angeles*, 58 Cal. 80.

⁴ *Vernon Irr. Co. v. Los Angeles*, 106 Cal. 237, 39 Pac. Rep. 762; *Los Angeles v. Los Angeles F. & M. Co.*, 152 Cal. 645, 93 Pac. Rep. 869; Dis.

217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Los Angeles v. Hunter*, 156 Cal. 603, 105 Pac. Rep. 755; *Miller v. Bay Cities Water Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S., 772; *Anaheim Water Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1062.

⁵ See, also, *Anaheim W. Co. v. Fuller*, 150 Cal. 327, 88 Pac. Rep. 978, 11 L. R. A., N. S., 1062; *Feliz v. Los Angeles*, 58 Cal. 73; *Fellows v. Los Angeles*, 151 Cal. 52, 90 Pac. Rep. 137; *Hooker v. Los Angeles*, 188 U. S. 314, 47 L. Ed. 487, 23 Sup. Ct. Rep. 395; *Devine v. Los Angeles*, 202 U. S. 313, 50 L. Ed. 1046, 26 Sup. Ct. Rep. 652; *Los Angeles v. Pomeroy*, 124 Cal. 597, 57 Pac. Rep. 585; 63 L. R. A. 471 (writ of error) dismissed, 188 U. S. 314, 23 Sup. Ct. Rep. 395, 47 L. Ed. 487.

§ 582. The Mexican water laws—Pueblo rights—Right to extend the use of water to territory annexed to pueblos.—The pueblo rights described above were not confined strictly to the village or town included within any particular pueblo, but as stated in the seventh article of the “Plan of Pictic,” the neighbors and natives shall likewise enjoy the use of the waters from the royal and vacant lands lying outside of the tract assigned to the new town jointly with the residents and natives of the immediate and adjoining towns.¹ And the government and control of the waters used by those on the outside was to be the same as the control of those waters used inside of the towns. It is therefore held by the Supreme Court of California in construing these pueblo rights that such a pueblo right to the water of a stream includes the right to take all the water that is reasonably necessary to give an ample supply to the use of its inhabitants and for all *municipal* purposes for which the city may require water; that this right is measured by the necessity, and if the needs increase in the future the right will expand to include them; and this, although the population of the city is not confined to the original pueblo limits.² In the late case of the City of Los Angeles v. Hunter,³ it was said: “The right to use the water upon annexed territory not within the limits of the original pueblo is distinctly declared in the City of Los Angeles v. Pomeroy.”⁴

Under the California rule of the extension of pueblo rights to lands other than those within the original pueblo limits, there is a question which might arise. Can a city or municipality, which has succeeded to the original Mexican pueblo rights to the use of water, so extend the area upon which the water may be used that such city or municipality may engage in the general irrigation business for the irrigation of lands far from the town boundaries? In answer to this we will say that there is nothing in the California decisions which permits the extension of the area beyond the limits of the *town or city* where the same has been extended beyond the original pueblo limits. And, although there seems to be no direct decision upon the question, upon principle, we can not see how under the “Plan of Pictic” the limit of the land irri-

¹ See Sec. 581.

³ 156 Cal. 603, 105 Pac. Rep. 755.

² Los Angeles v. Pomeroy, 124 Cal. 597, 57 Pac. Rep. 585.

⁴ See *supra*.

gated by the pueblo can be extended beyond the town limits, where the town exceeds in limit the original pueblo. The right to the use of water under the "Plan of Pictic" was that the neighbors and natives should likewise enjoy the same use of the water as the inhabitants of the town, but the lands of both were limited to those of the pueblo itself. And to hold that a city or town by virtue of its being a successor to original Mexican pueblo rights could go into the irrigation business for the irrigation of lands on the outside of the original boundaries of the pueblo where such lands were not included within the boundaries of the town, as extended, we find no authorities. It is, therefore, our opinion that this can not be done.

§ 583. **The Mexican water laws**—As affecting the rights to water on Mexican land grants.—Prior to the cessions of the territory formerly owned by Mexico to the United States a large number of grants of land were made to individuals by the Mexican Government. In the treaty with Mexico it was provided to the effect that such actual and *bona fide* grantees should be protected in their titles to these lands, and that their right of ownership should be respected by the United States Government after the territory had passed to this Government. Following the treaty with Mexico Acts of Congress were passed to ascertain and settle the private land grant claims. Legal proceedings were had under these Acts of Congress,¹ and the titles to the land included in these *bona fide* grants confirmed in the respective grantees or their successors in interest. But the treaty with Mexico, while thus securing the title and ownership of the tracts of land which had been granted by Mexico, did not attempt to provide that this ownership should be governed and controlled by the laws of Mexico, nor by any other laws than by the laws of the United States, and of the States and Territories formed out of the domain acquired from Mexico including these land grants.² So, also, as to the water rights

¹ See Act of Congress of March 3, 1851, 9 Stat. L. 631.

In the case of *Los Angeles v. Los Angeles Farm & M. Co.*, 152 Cal. 645, 93 Pac. Rep. 869, the Court held that under the above Act it did not contemplate the presentation of claims to

anything but "land"; the claims to water were not included.

² *Hagar v. Reclamation Dist. No. 108*, 111 U. S. 701, 28 L. Ed. 569, 4 Sup. Ct. Rep. 663; *Id.*, 66 Cal. 54, 4 Pac. Rep. 945; *Woodruff v. North Bloomfield etc. Co.*, 9 Sawy. 441, 18

on these grants. The riparian rights of a private proprietor under a Mexican grant duly confirmed are exactly the same, and governed by the same laws, as those held and enjoyed by any other private riparian proprietor within the same State. It is the title which governs and not the source of title. Therefore in those jurisdictions which uphold the common law theories of riparian rights, as, for instance, the State of California,³ these rights attach to all lands whose title is deraigned from Mexican grants, as well as to those lands which were granted by the United States. Upon this question there is no controversy.⁴ However, the question whether or not such water rights would attach as riparian rights to the lands included with our Mexican land grants is left for the respective States within which such grants lie to decide. As was held by the Supreme Court of the United States,⁵ riparian rights asserted to have been secured by the treaty of Guadalupe Hidalgo, between the United States and Mexico, are not rights of Federal origin which, when denied, lay the basis for a writ of error from the Federal Supreme Court to a State Court, and, therefore, the case was dismissed for want of jurisdiction.

There is also no question but that an appropriation of water under the Mexican laws by the diversion of the waters of a stream and used for a beneficial purpose should be upheld after the cession to the United States; provided, of course, that there was a use of all the water for a beneficial purpose continued after that date.

Fed. Rep. 753, 8 Sawy. 628, 16 Fed. Rep. 25; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

The Mexican Government on February 5, 1824, made a large number of grants of water to various grantees. On a subsequent day it made grants of water for other land, using the same language. Few grants were subsequently made. Each grant granted to the grantees "one day of water with a corresponding labor of land." The original grantees of both lands used the water for irrigating their respective lands concurrently. It was held by the Court in a recent Texas case that the grants did not give any

superior right to any of the grantees, but distributed to each water rights in common. *San Juan Ditch Co. v. Cassin*, — Tex. Civ. App. —, 141 S. W. Rep. 815.

³ See Sec. 507.

⁴ See *Los Angeles v. Baldwin*, 53 Cal. 469; *Pope v. Kinman*, 54 Cal. 3; *Vernon Irr. Co. v. Los Angeles*, 106 Cal. 237, 39 Pac. Rep. 762; *Los Angeles v. Pomeroy*, 124 Cal. 597, 57 Pac. Rep. 585.

⁵ *Los Angeles Farming and Milling Co. v. Los Angeles*, 217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452; for the same case below, see 152 Cal. 645, 93 Pac. Rep. 869, 1135.

And, therefore, where these Mexican land grants lie within jurisdictions which entirely reject the common law rule of riparian rights, as is the case in Arizona and New Mexico, another question presents itself. Upon examination of the Mexican law of waters, there can be no question but that there were certain rights which might be acquired by virtue of the ownership of the land along the stream. These rights therefore were somewhat analogous to the common law of riparian rights. It is denied that this was the case in the State of Sonora, and is held that the only personal right which could be acquired was by appropriation, and which might be acquired by concessions from the Government.⁶ But as we understand the law of waters to have been under the Mexican law, the use of water of non-navigable streams was under the control of the Mexican Government, and as we have stated in a previous section it had the power of retaining the waters in their natural channels for the sole use of riparian owners; or, by way of concessions, the right of conferring the exclusive use of a portion or the whole of the waters of such a stream to individuals or corporations, for use on non-riparian lands.⁷ Now this being true, the change of

⁶ "Whatever may have been the general law throughout the Republic of Mexico on the subject of water, it is reasonably certain that in the State of Sonora the doctrine of appropriation, as now recognized, was to some extent in force by custom. In this Territory irrigation was practiced in the Santa Cruz Valley prior to the cession, and it is well known the right of appropriation without regard to the riparian character of the lands was there in force probably from the time when the Spaniards first settled in the valley. Our statutes, as well as those of New Mexico, seem to have had their origin in the Mexican law, as modified by custom. To concede, therefore, to the owner of the grant in question riparian rights, would be in effect to concede to it what his predecessors in interest do not appear to have possessed prior to the cession under the Gadsden Purchase." Bo-

quillas etc. *Co. v. Curtis*, 11 Ariz. 128, 89 Pac. Rep. 504. Of this statement it was said by the Supreme Court of the United States on appeal: "This is the statement of the Territorial Court, and we know nothing to control it. It is not met by arguments as to the general character of the Mexican law, or by inference from the situation and nature of the grant." The same doctrine seems to be implied by the Howell Code, Chap. 55, Sec. 25; 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493.

See the case of *Los Angeles v. Los Angeles Farming Co.*, 152 Cal. 645, 93 Pac. Rep. 869; dismissed, 217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452, where the whole claim of the defendant was based upon the riparian rights of a Spanish-Mexican land grant.

⁷ See Sec. 579.

sovereignty operated merely to transfer from Mexico to the Government of the United States and the States and Territories where these lands lie. And, as the local laws upon the subject of waters within their respective jurisdictions are left entirely to the States and Territories, the Territories might, therefore, confer common law rights upon the riparian owner; or, upon the other hand, it might establish the right to the use of the waters by prior appropriation and diversion for the irrigation of lands either riparian or non-riparian, or for other beneficial uses not connected with the common law rules of riparian rights. This latter the legislatures of the Territories of Arizona and New Mexico have seen fit to do; in other words, they have chosen to deny to riparian owners exclusive rights, and have conferred upon others rights to the use of the waters of these streams, without reference to the situation of the lands owned by the latter with respect to the streams from which such waters may be taken. Hence it follows that in these Territories riparian rights are not recognized as attaching to Mexican land grants made before the treaty of Guadalupe Hidalgo or the Gadsden Purchase.⁸

⁸ *Boquillas Land & C. Co. v. Curtis*, 11 Ariz. 128, 89 Pac. Rep. 504; affirmed, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493, where the Territorial Court upon this subject said: "If, under the Mexican law, the use of waters of innavigable streams was under legislative control, the change of sovereignty operated merely to transfer this right of control from Mexico to the Government of the United States. This being so, it must follow that the owner of the land grant, with the change of sovereignty, stood in exactly the same position as before, with relation to the right of the sovereignty to grant the exclusive use of waters of any innavigable stream, flowing through or adjoining the grant, to whomsoever it might choose. The United States, or its delegated authority, the Territory of Arizona, might, therefore, confer common law rights upon the riparian owner,

or might establish the right of prior appropriation, and grant this right to others than riparian owners. As we have seen, the Legislatures of New Mexico and of Arizona, under their delegated authority from the sovereignty of the United States, to whom, under the doctrine stated in *Lux v. Haggin*, passed the right of control over innavigable waters by the treaty of cession from Mexico, have chosen to deny to riparian owners exclusive rights and to confer upon others rights to the use of such water without reference to the situation of the lands owned by the latter with respect to the streams from which such water may be taken."

See, also, *Albuquerque and & Irr. Co. v. Gutierrez*, 10 N. M. 177, 61 Pac. Rep. 357; affirmed in 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338.

See, also, *Trambley v. Luterma*, 6

§ 584. **Conclusions.**—In this part we have endeavored to trace the authority for the system of appropriation of the waters of natural streams for irrigation and other beneficial purposes, as it is practiced in this Western country, back further than the origin of the common law of England, to the civil law of the Roman Emperors. We have shown how the civil law upon this subject has come down through the early Dutch, French, and Spanish settlers to different portions of this country. We have also shown how the civil law came to this country through the Spanish who settled in Mexico, by means of the acquisition by this country of the State of Texas, the treaty of Guadalupe Hidalgo, and the Gadsden Purchase. From the previous sections it is evident that the laws governing private rights in waters differed very little under Mexican rule at the time when the Southwest was ceded to the United States from those in force in California at the present time. The law of appropriation for beneficial purposes was known and recognized as authority, and the same is also true respecting the law of riparian rights. There were in Mexico prior to the cession of California the two systems separate and distinct that we find now under the law of that State. The Mexican law as it existed at the time of the cession of California recognized an inherent and vested right in riparian owners to the use of the waters of a stream; and also recognized a vested right in those who had actually appropriated the waters in the manner and under the conditions prescribed by the laws of that country. When the territory of the Southwest was transferred to the United States by the treaty of Guadalupe Hidalgo in 1848, and became subject to the laws of this Government, and finally to the laws of the respective States and Territories organized out of the same, the existing laws regarding private interests in and to the waters of streams and lakes were not found to be materially in conflict with the laws of the United States, or those finally adopted by the several States and Territories. So, in the change from the Mexican laws to those of the United States few obstacles were thrown in the way as regards water and other property rights of persons who were grantees of the Mexican Government to certain lands included within this tract, prior to the time of the treaty, and who claimed rights in the waters of flowing

streams by virtue of their riparian ownership; also the rights of those persons at the time of the acquisition of the territory including their lands who were actually appropriating the waters of the streams and rivers by diverting them from their natural channels, and applying them to some beneficial purpose. The law governing waters in Mexico was always subject to Government control, and by the transfer of the title of these lands to this country, through which these waters flow, there was simply a change of sovereign and not a change of right. We have also shown that it is left entirely to the States and Territories formed out of the lands acquired from Mexico to adopt whatever rule as to waters they may see fit, whether it be the common law of riparian rights, the Western theory of water rights based only upon appropriation and diversion from the natural channels and the water applied to some beneficial use or purpose, or whether it be a combination of both rules as is the case in California and some of the other States. Under the civil law and as modified by the Spanish and Mexicans, the exclusive right to the use of waters for the irrigation of lands other than riparian, was entirely under the Government control and granted by way of concessions to the individuals applying therefor. The question of priority of appropriation, by simply going to a stream and taking the water therefrom prior to any one else doing the same thing, did not enter into their laws. This feature of the Western rule of appropriation of waters was left to the miners and settlers in the Western portion of this country, after its acquisition from Mexico. This subject will be discussed in future portions of this work.¹

¹ See Secs. 585-756.

PART VIII.

THE APPROPRIATION OF WATERS FOR BENEFICIAL USES.

CHAPTER 31.

ARID REGION DOCTRINE OF APPROPRIATION.

- § 585. Review—Scope of present chapter.
- § 586. What it is—Judge Hawley's definition and description.
- § 587. What it is—Definition—In derogation of the common law.
- § 588. Physical cause of doctrine of appropriation.
- § 589. Physical cause of doctrine—Common law deemed inapplicable.
- § 590. Common law adopted where inapplicable—General rule.
- § 591. Common law deemed inapplicable—Cause of the change of rule in Nevada.
- § 592. Common law deemed inapplicable—The present situation in California.
- § 593. The question as to what law governs waters within the respective States is left entirely to the States to decide.
- § 594. The doctrine of appropriation, as against riparian rights—Practical workings of the two systems as to irrigation.

§ 585. **Review—Scope of present chapter.**—In the preceding chapters of our work we have seen that under the common law of riparian rights, as the same is strictly construed by both the English and American authorities, the rights of the riparian proprietors in the use of the waters of the natural streams or lakes upon which their lands touched were the only private rights in and to those waters recognized under that law.¹ This right was created by Nature, *ex jure naturae*, and was an incident to their ownership of the land bordering upon the water, and treated as a part of the same. Also that these rights of the riparian proprietor existed whether they chose to exercise them or not, to the ex-

¹ For common law theories of riparian rights, see Chaps. 21-28, Secs. 450-551.

For the rights of the public in waters, see Chaps. 15-18, Secs. 324-389.

clusion of all others desiring to exercise them; that these rights did not depend upon occupancy, and were not limited by the prior occupation of others not amounting to an adverse enjoyment by prescription, but that the rights of all of the proprietors upon a stream were equal, and each one entitled to a reasonable use of the stream, provided that he did not injure any of his neighbor's rights in and to the same, and that it was wholly immaterial as to who was first in time. We have also seen that one of the fundamental principles of the common law was that the streams must be permitted to flow in their natural channels as they were wont to flow by Nature, without any material diminution in quantity or alteration in quality. As Chancellor Kent said: "*Aqua currit et debet currere ut currere solebat* is the language of the law." Hence the use of the water must necessarily, under these restrictions, be very limited, as compared with the lawful uses of the present day rules. We have also seen how this strict rule of the common law as to the use of the water, in eleven of the States of this country, has been enlarged and extended so as to include the diversion of the water from its natural streams and its use for the irrigation of land, and that, too, where the greater portion of the water was consumed.²

We have also discussed in another chapter that portion of the civil law of the Roman Emperors upon the subject of waters, which has been handed down to us in a modified form by the Spaniards and Mexicans. Under this system of laws the water of the natural streams was considered *publici juris*, or as belonging to the public; the use of the water could be made by individuals, but it was always under strong governmental control.³ This influence of the civil law is still felt in the Western States, in spite of the fact that in all of these States, primarily at least, the common law of England was adopted as their system of jurisprudence, which also included its law of waters. But, ever since that section of this country located west of the 100th meridian, and known as the "Arid Region," first began to be peopled by the Anglo-Saxon race, following at first mining as an occupation, and afterward with increasing numbers settling down to agricultural and mechanical industries, a great change from the old common law theories

² See for irrigation as a riparian right, Chap. 26, Secs. 498-525.

³ For civil law governing waters, see Chaps. 29, 30, Secs. 552-584.

has been gradually taking place, until today in some of the States formed out of the "Arid Region" the common law theories upon the subject of waters are absolutely abolished, in others ignored, and in all modified, particularly with regard to the uses of the waters of inland streams and lakes. The present chapter will be devoted to showing how this change was brought about, and the application of the new doctrines to the lands and waters upon the public domain, or that part owned by the United States.

In this part we will discuss the appropriation of water for beneficial uses and purposes as the same is known under the Arid Region Doctrine of appropriation.

In the present chapter we will discuss the Arid Region Doctrine of appropriation, what it is, and how, because of the inapplicability of the common law principles of riparian rights to physical conditions of many portions of our arid West, this doctrine was adopted.

§ 586. What it is—Judge Hawley's definition and description.

—No man better understands the cause of the adoption of the Arid Region doctrine of appropriation and its principles than did Judge Hawley, first Chief Justice of the Supreme Court of Nevada and afterward Federal Judge for the District of the State of Nevada. The judicial life of Judge Hawley practically coincides with the formative period of the Arid Region doctrine of appropriation. And there were tried before him probably as many important cases, involving all phases of this subject, as were tried before any other Judge of the country. In three important Federal cases—of *Hewitt v. Story*,¹ *Union Mill & Mining Co. v. Dangberg*,² and *Rodgers v. Pitt*,³ wherein opinions were rendered by Judge Hawley, he used practically the same language in defining and describing the Arid Region doctrine of appropriation. We can do no better than to quote certain passages from these three opinions. He said:

"We consider the law to be well settled that the right to water flowing in the public streams may be acquired by an actual appropriation of the water for a beneficial use; that, if it is used for irrigation, the appropriator is only entitled to the amount of

¹ 64 Fed. 510, 30 L. R. A. 265, 12 C. C. A. 250, 29 U. S. App. 155; *Id.*, 51 Fed. Rep. 101.

² 81 Fed. Rep. 73.

³ 89 Fed. Rep. 420, 129 Fed. Rep. 932.

water that is necessary to irrigate his land by making a reasonable use of the water; that the object had in view at the time of the appropriation and diversion of the water is to be considered in connection with the extent and right of appropriation; that if the capacity of the flume, ditch, canal, or other aqueduct, by means of which the water is conducted, is of greater capacity than is necessary to irrigate the lands of the appropriator, he will be restricted to the quantity of water needed for the purposes of irrigation, for watering his stock, and for domestic use; that the same rule applies to an appropriation made for any other use or purpose; that no person can, by virtue of his appropriation, acquire a right to any more water than is necessary for the purpose of his appropriation; that, if the water is used for the purpose of irrigating lands owned by the appropriator, the right is not confined to the amount of water used at the time the appropriation is made. He would be entitled, not only to his needs and necessities at that time, but to such other and further amount of water, within the capacity of his ditch, as would be required for the future improvement and extended cultivation of his lands, if the right is otherwise kept up; that the intention of the appropriator, his object and purpose in making the appropriation, his acts and conduct in regard thereto, the quantity and character of land owned by him, his necessities, ability, and surroundings, must be considered by the Courts, in connection with the extent of his actual appropriation and use, in determining and defining his rights; that the mere act of commencing the construction of a ditch with the avowed intention of appropriating a given quantity of water from a stream gives no right to the water unless this purpose and intention are carried out by the reasonable, diligent, and effectual prosecution of the work to the final completion of the ditch and diversion of the water to some beneficial use; that the rights acquired by the appropriator must be exercised with reference to the general condition of the country and the necessities of the community, and measured in its extent by the actual needs of the particular purpose for which the appropriation is made, and not for the purpose of obtaining a monopoly of the water, so as to prevent its use for a beneficial purpose by other persons; that the diversion of the water ripens into a valid appropriation only where it is utilized by the appropriator for a beneficial use; that

the surplus or waste water of a stream may be appropriated, subject to the rights of prior appropriators, and such an appropriator is entitled to use all such waters; that, in controversies between prior and subsequent appropriators of water, the question generally is whether the use and enjoyment of the water for the purposes to which the water is applied by the prior appropriator have been in any manner impaired by the acts of the subsequent appropriator. These general principles are of universal application throughout the States and Territories of the Pacific Coast. They have, in one form or another, been declared, upheld, and maintained by the Courts by a uniform current of decisions in California ever since the decision in *Eddy v. Simpson*.”⁴

A better description of the Arid Region doctrine of appropriation can not be given than is embodied in the above statement.

§ 587. What it is—Definition—In derogation of the common law.—The Arid Region Doctrine of appropriation may be defined

43 Cal. 249, 58 Am. Dec. 408; also citing *Kelly v. Natoma Water Co.*, 6 Cal. 105, 1 Morr. Min. Rep. 592; *Kimball v. Gearhart*, 12 Cal. 27, 1 Morr. Min. Rep. 615; *Ortman v. Dixon*, 13 Cal. 33; *Weaver v. Eureka Lake Co.*, 15 Cal. 271, 1 Morr. Min. Rep. 642; *McKinney v. Smith*, 21 Cal. 374, 1 Morr. Min. Rep. 650; *Hill v. Smith*, 27 Cal. 476; *Id.*, 32 Cal. 166, 4 Morr. Min. Rep. 597; *Nevada Water Co. v. Powell*, 34 Cal. 109, 91 Am. Dec. 685, 4 Morr. Min. Rep. 253; *Nevada County & S. Canal Co. v. Kidd*, 37 Cal. 282; *Mitchell v. Amador Canal & Min. Co.*, 75 Cal. 483, 17 Pac. Rep. 246; *Peregoy v. McKissick*, 79 Cal. 572, 21 Pac. Rep. 967; Cal. Civ. Code, Secs. 1410 *et seq.*

The same rules prevail in Nevada: *Lobdell v. Simpson*, 2 Nev. 274, 90 Am. Dec. 537; *Ophir Silver Min. Co. v. Carpenter*, 6 Nev. 534, 97 Am. Dec. 550, 4 Morr. Min. Rep. 640; *Proctor v. Jennings*, 6 Nev. 83, 3 Am. Rep. 240, 4 Morr. Min. Rep. 265; *Barnes*

v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Simpson v. Williams*, 18 Nev. 432, 4 Pac. Rep. 1213.

In Colorado: *Wheeler v. Northern Colorado Irrigation Co.*, 10 Colo. 583, 17 Pac. Rep. 487, 3 Am. St. Rep. 603; *Platte Water Co. v. Northern Colorado Irrigation Co.*, 12 Colo. 525, 21 Pac. Rep. 711; *Combs v. Agricultural Ditch Co.*, 17 Colo. 146, 28 Pac. Rep. 966, 31 Am. St. Rep. 275; *Fort Morgan Land & C. Co. v. South Platte Ditch Co.*, 18 Colo. 1, 30 Pac. Rep. 1032, 36 Am. St. Rep. 259.

In Idaho: *Conant v. Jones*, 3 Idaho 606, 32 Pac. Rep. 250.

See, also, *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452; *Broder v. Natoma Water & Min. Co.*, 101 U. S. 274, 25 L. Ed. 790, affirming 50 Cal. 621; *Gould, Waters*, Secs. 228 *et seq.*

as that doctrine or rule of law which has grown up in this Western portion of our country, governing the use of the water of the natural streams and other bodies, by its appropriation for any useful or beneficial purpose, based upon the physical necessities of the case; and, whereby for the purpose of applying the water to some beneficial use, the water must be diverted from its natural channels, and, in contradistinction to the strict construction of the common law of riparian rights, the place of use may be on either riparian or nonriparian lands, and the right based upon priority.¹ In fact, this doctrine is in derogation of the common law, and as said in an early California case, it is "without judicial or legislative precedent, either in our own country or in that from which we have borrowed our jurisprudence."² In the early history of the doctrine, however, attempts were made in some of the California decisions to reconcile the doctrine of appropriation with the common law. But, for the reason that the very fundamental principles of the two doctrines are opposed to each other, this attempt at reconciliation did not get very far.³

¹ For the definition of the appropriation of water, see Sec. 707.

That the Doctrine of Appropriation is in derogation of the common law, see *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 504; *Eddy v. Simpson*, 3 Cal. 249, 58 Am. Dec. 408, 15 Morr. Min. Rep. 175.

It is "an innovation upon the old rules of law upon the subject." *Crandall v. Woods*, 8 Cal. 136, 1 Morr. Min. Rep. 604.

"The doctrine of 'appropriation,' so called, is not the doctrine of the common law." *Lux v. Haggin*, 69 Cal. 255, 10 Pac. Rep. 674.

² *Bear River Water Co. v. New York M. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526.

See, also, *Hoffman v. Stone*, 7 Cal.

49, 4 Morr. Min. Rep. 520; *Pomeroy on Riparian Rights*, Sec. 20; *Yale on Mining Claims and Water Rights*, pp. 129, 137.

³ It was said by Chief Justice Sanderson in the case of *Hill v. Smith*, 27 Cal. 476, 4 Morr. Min. Rep. 597: "Moreover, the entire charge impliedly if not expressly proceeds upon and sanctions the idea that as between ditch owners and miners using the water of a stream in the mineral regions of the State for mining purposes, the law tolerates and winks at some uncertain and indeterminate amount of injury by the one to the prior right of the other. This is due in great measure doubtless to the notion, which has become quite prevalent, that the rules of the common law touching water rights have been materially modified in this State upon the theory that they were inapplicable to the conditions found to exist here, and therefore inadequate to a

About the most that can be said of the two doctrines is that they may both exist in the same State at the same time;⁴ but even then they are continually clashing.

§ 588. **Physical cause of doctrine of appropriation.**—There were manifest equities which demanded that the common law, hastily adopted by the Western States and Territories from a country so dissimilar in climate and other physical conditions to those of the arid region, should not be made applicable when it imperiled the most vital interests of some of the richest agricultural districts of the world. The rain does not fall alike over all the earth, and especially in mountainous countries. In some sections of the United States included in the arid West, the annual rainfall amounts to thirty or forty inches, while in other sections it amounts to only from six to ten inches per annum. This is due to a certain extent to the topographical features of the country, the proximity to the sea, and to other causes which have their influence in special localities.¹ The mighty peaks of the Rocky Mountains tap the rain clouds and drain them of their moisture before they reach the space over the valleys, which are thus, in their natural condition, left dry and arid. This is especially true during the summer months or during the cropping season, when the water is needed the most as an aid to agriculture. Also during the winter season, beginning with early fall, great masses of snow are piled up in the mountains, where, if the mountains are covered with timber and undergrowth, the snow remains in these reservoirs of Nature until the summer's sun causes it to gradually melt and run down into the canyon streams, then out from the mountains toward the sea, through the vast extent of dry valleys, where perhaps not a drop of moisture has fallen for months.² Thus it happens that when the water reaches the valleys in the arid region on its way

just and fair determination of controversies touching such rights. *This notion is without any substantial foundation.*"

See, also, *Eddy v. Simpson*, 3 Cal. 249, 58 Am. Dec. 408, 15 Morr. Min. Rep. 175.

⁴ *Crawford Co. v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60

L. R. A. 889, 108 Am. St. Rep. 647; *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

¹ For influence of forests upon the rainfall, see Chap. 2, Secs. 47-57.

See, also, Secs. 5, 6.

² For the influence of forests in storing water, see Chap. 2, Secs. 47-57.

to the ocean, instead of being precipitated nearly equally upon the earth, as is the case in what is known as the "humid region" or "rain belt," it is gathered in natural channels, which only touch a very small proportion of the land within the arid region. Under a strict construction of the rules of the common law, as we have seen in a previous portion of this work, a very few riparian owners would control all of the water in that part of the country to the exclusion of all others. Nature clearly designed, in spite of the facts set forth above as to the inequality of precipitation, that the rain should still be permitted to shed its blessings on all, and that a nonriparian land owner should not be prevented from securing his just proportion of the water, simply because of the topographical features of the country thereabouts, which are entirely beyond his control. The water which he should receive drains from its storage source in the mountains into streams which flow only by his neighbor's land, who, as an incident of his ownership of the soil adjoining the stream, controls all of its waters, although the same may be far in excess of what he and all other riparian owners may need. And, by a strict construction of the common law, this surplus water must not be diverted from its natural channel, but must be permitted to flow, without material diminution in quantity, on to the sea. And even under the Western American doctrine of riparian rights, as modified and expanded,³ to the extent that water may be used for irrigation, it is the unanimous consensus of authority that the water can not be diverted to irrigate non-riparian lands.⁴

§ 589. **Physical cause of doctrine—Common law deemed inapplicable.**—The common law of riparian rights had its origin in Great Britain, under conditions of climate peculiar to its position, in the path of the great Gulf Stream, in an atmosphere laden with moisture, which is precipitated with lavish profusion upon that favored spot. The law gave to the riparian owners, as an incident to their ownership of the soil adjoining the water, the right to the natural flow of the stream without material alteration or diminution. One might use the water for any purpose, provided

³ For common law riparian rights as expanded, see Secs. 511, 512.

⁴ For riparian right of irrigation must be confined to riparian lands, see Secs. 516, 517.

that he in turn restored the same to its natural course, so that his riparian neighbor below might receive the same unaltered in quality and undiminished in quantity. He was not permitted to drain his land so as to increase the quantity of water in the stream to the injury of his neighbors below, nor dam the water back upon the lands to the injury of those above him; nor could there be, according to that law, any diversion or use of the water by one owner that would work material detriment to any other owner above or below him. Owing to the position of the country and its climatic influences the great problem there to be solved was how best to drain the water off the land and get rid of it, not how to save it in order to conduct it upon the land in aid of the husbandman.¹ This latter has been the great problem in the arid portions of the earth, from the earliest days,² and this is especially true in that part of this country west of the 100th meridian known as the arid and semi-arid regions. So the fundamental cause of the change in this portion of our country, from the common law rules of riparian rights, as the same are in force in England and in the Eastern States of the Union, to the Arid Region doctrine of appropriation, in all of our Western States where water is used for irrigation, can be attributed principally to the difference in the physical conditions of the arid region from that of England and the East as regards the equal, or rather, the unequal distribution of moisture. Out of this unequal distribution of rainfall grew the necessity of the early California system of the miners, relative to water rights, which system was based upon the principle of free land, to which discovery, appropriation, and use gave title.³

¹ For common law theories of riparian rights, see Secs. 450-551.

² For irrigation in the ancient countries, see Chap. 3, Secs. 63-87.

³ *Reno Smelting & R. Works v. Stevenson*, 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364; *Atchison v. Peterson*, 87 U. S. 20 Wall. 507, 22 L. Ed. 415, 1 Morr. Min. Rep. 583, in which Mr. Justice Field said: "As respects the use of water for mining purposes, the doctrines of the common law, declaratory of the rights of riparian owners were,

at an early day, after the discovery of gold, found to be inapplicable, or applicable only in a very limited extent, to the necessities of the miners, and inadequate to their protection."

See, also, *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Broder v. Natoma W. Co.*, 101 U. S. 274, 25 L. Ed. 790, affirming 50 Cal. 621; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Osgood v. Eldorado W. & M. Co.*, 56 Cal. 571, 5 Morr. Min. Rep. 37.

In the case of *Clough v. Wing*,⁴ decided by the Supreme Court of Arizona, which State is within the very heart of the arid region, after referring to several cases upholding the Arid Region doctrine as against that of the common law, the Court said: "These cases state a doctrine very different from the common law. . . . That law gave to the servient and dominant heritage the right to the natural flow of the water. The riparian owner might use the water in its course to turn his waterwheel or for other purposes, but was required to restore the same to its natural course. While he might not hinder the flow so as to injure those below him, he might depasture his domestic animals so as to drink therefrom, and take water for domestic uses. He might not drain his land so as to increase the flood, to injure those below, or dam the water back upon the lands above him. The problem there to be solved was how best to drain the water off the land and get rid of it, not how to save it, to be conducted on the land in the aid of the husbandman. The latter has been the problem in the arid portions of the earth. From 'time whereof the memory of man runneth not to the contrary' the rights of riparian owners were settled in the common law."⁵ Again, in a later Arizona case, of *Boquillas Land & Cattle Co. v. Curtis*,⁶ Mr. Justice Nave, in concurring in the main opinion, said: "Without

⁴ 2 Ariz. 371, 17 Pac. Rep. 453.

⁵ Citing 1 Inst. 4; 2 Bla. Comm. 18; Angell on Water Courses 8; 3 Kent Comm. 361; Elliott v. Fitchburg R. Co., 10 Cush. (Mass.) 191, 57 Am. Dec. 85; Wright v. Howard, 1 Sim. & Stu. 190; Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; Weiss v. Steel Co., 13 Ore. 496, 11 Pac. Rep. 255; Hill v. Lenormand, 2 Ariz. 354, 16 Pac. Rep. 266; Ware v. Allen, 140 Mass. 573, 5 N. E. Rep. 629; Mason v. Cotton, 2 McCreary 82, 4 Fed. Rep. 792; Dumont v. Kellogg, 29 Mich. 420, 18 Am. Rep. 102; Jones v. Adams, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; Pyle v. Richards, 17 Neb. 180, 22 N. W. Rep. 370; Van Orsdal v. R. Co., 56 Iowa 490, 9 N. W. Rep. 379;

Union Pacific R. Co. v. Dyche, 31 Kan. 120, 1 Pac. Rep. 243; *Red River Co. v. Wright*, 30 Minn. 249, 15 N. W. Rep. 167, 44 Am. Rep. 194; *Creighton v. Kaweah etc. Irrigation Co.*, 67 Cal. 221, 7 Pac. Rep. 658; *Moore v. Clear Lake Co.*, 5 Pac. Rep. 494; *Wilcox v. Hausch*, 64 Cal. 461, 3 Pac. Rep. 108; *Larimer etc. Co. v. People*, 8 Colo. 614, 9 Pac. Rep. 794; *Garwood v. N. Y. C. & H. R. R. Co.*, 83 N. Y. 400, 38 Am. Rep. 452; *Pennsylvania R. Co. v. Miller*, 3 Atl. Rep. 780; *Total v. Bonnefoy*, 123 Ill. 653, 14 N. E. Rep. 687, 5 Am. St. Rep. 570; *Peck v. Herrington*, 109 Ill. 611, 50 Am. St. Rep. 627.

⁶ 11 Ariz. 128, 89 Pac. Rep. 504; affirmed in 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493.

further elaboration of my reasons, I state my belief that the utter incompatibility of the doctrine of riparian rights with the conditions of life in this Territory is an all-sufficient reason, under the principles of the common law itself, to hold that that doctrine is not here in force."

Again, in the case of *Farm Investment Co. v. Carpenter*,⁷ it is said: "This use and the doctrine supporting it are founded upon the necessities growing out of natural conditions, and are absolutely essential to the development of the material resources of the country. Any other rule would offer an effectual obstacle to the settlement and growth of this region and render the lands incapable of continued successful cultivation. The waters for the reclamation of the desert lands must be obtained, in a very large measure, from the natural streams and other natural bodies of water. The common law doctrine of riparian rights relating to the use of the water of natural streams and other natural bodies of water not prevailing, but the opposite thereof, *and one inconsistent therewith*, having been affirmed and asserted by custom, laws, and decisions of Courts, and the rule adopted permitting the acquisition of rights by appropriation, the waters affected thereby become, perforce, *publici juris*."

From the above authorities cited in our notes, therefore, it can be readily seen, that primarily the cause of the change was the inapplicability of the common law rules to the physical characteristics of the arid West. There the greater portion of the country is extremely arid, and the soil absolutely unfit for cultivation unless irrigated. But with irrigation some of the greatest crops in the world can be raised. The general surface of the country is a table land traversed by parallel mountain ranges, cut through by deep gorges through which the waters flow. The topographical features, therefore, afford great natural advantages for conducting the water over the lands. The very condition of the country and the *necessities* of the situation impelled the first miners and settlers upon the public lands to resort to the diversion and use of water of the natural streams in violation of the strict rules of the common law.⁸ This fact in itself is a striking illustration and a conclusive argument against the adoption of all of the rules of the common law

⁷ 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

⁸ For history of the change, see Secs. 595-626.

where certain portions of them are inapplicable. For, were the common law rules governing riparian rights the prevailing ones and strictly followed, the most of the water that is now being diverted from the natural streams to fertilize and irrigate the soil in this great arid region would be wasted in the sea.⁹

In the case of *Willey v. Decker*¹⁰ it is said: "In this State, on the other hand, the common law doctrine concerning the rights of a riparian owner in the water^{*} of a natural stream has been held to be unsuited to our conditions, and this Court has declared that the rule never obtained in this jurisdiction.¹¹ It was said in the opinion in that case that: 'A different principle, better adapted to the material condition of this region, has been recognized. That principle, briefly stated, is that the right to the use of water for beneficial purposes depends upon a prior appropriation.' And, further, in explanation of the reasons for the existence of the new doctrine, it was said: '*It is the natural outgrowth of the conditions existing in this region of the country.* The climate is dry, the soil is arid, and largely unproductive in the absence of irrigation; but when water is applied by that means it becomes capable of successful cultivation. The benefits accruing to land upon the banks of a stream without any physical application of the water are few;

⁹ See for irrigation as a riparian right, early common law authorities, Secs. 499-506.

See, also, *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443; *Irwin v. Phillips*, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178; *Conger v. Weaver*, 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594; *Bear River v. New York M. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526; *Hill v. King*, 8 Cal. 336; *Mercéd M. Co. v. Fremont*, 7 Cal. 317, 327, 68 Am. Dec. 262, 7 Morr. Min. Rep. 313; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Crawford Co. v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Tolle v. Correth*, 31 Tex. 362, 98 Am. Dec. 540; *Mud Creek Irr. Co. v.*

Vivian, 74 Tex. 170, 11 S. W. Rep. 1078; *Prescott Irr. Co. v. Flathers*, 20 Wash. 454, 55 Pac. Rep. 635; *Paxton etc. Co. v. Farmers' etc. Co.*, 45 Neb. 884, 64 N. W. Rep. 343, 29 L. R. A. 853, 50 Am. St. Rep. 585; *In re Madera Irr. Dist.*, 92 Cal. 296, 28 Pac. Rep. 272, 675, 14 L. R. A. 755, 27 Am. St. Rep. 106, 5 Am. R. A. & Corp. Rep. 288; *Fallbrook Irr. Dist. v. Bradley*, 164 U. S. 112, 41 L. Ed. 369, 17 Sup. Ct. Rep. 66, reversing *Id.*, 68 Fed. Rep. 948; *Katz v. Walkinshaw*, 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35.

¹⁰ 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

¹¹ Citing *Moyer v. Preston*, 6 Wyo. 308, 44 Pac. Rep. 845, 71 Am. St. Rep. 914.

and while the land contiguous to water, and so favorably located as to naturally derive any sort of advantage therefrom, is comparatively small in area, the remainder, which comprises by far the greater proportion of our lands otherwise susceptible of cultivation, must forever remain in their wild and unproductive condition unless they are reclaimed by irrigation. Irrigation and such reclamation can not be accomplished with any degree of success or permanency without the right to divert and appropriate water of natural streams for that purpose, and a security accorded to that right. *Thus the imperative and growing necessities of our conditions in this respect alone*, to say nothing of the other beneficial uses, also important, have compelled the recognition, rather than the adoption, of the law of prior appropriation.' ''¹² But the legislatures and courts, at an early day, grasped the situation, and the result was that the Arid Region Doctrine of prior appropriation of the waters of the natural streams for beneficial uses was adopted in all of the Western States and Territories included within both the arid and semi-arid regions, where water is needed for irrigation. It is true that the common law doctrine of riparian rights has been retained in ten of these States,¹³ side by side with the doctrine of appropriation, but it is in such a modified and expanded form that even under it the waters of the streams may be diverted and used for irrigation by each riparian owner upon the stream.¹⁴

§ 590. Common law not adopted where inapplicable—General rule.—As has been stated before, all of the States of the Western portion of this country adopted the common law of England as their system of jurisprudence.¹ By unanimous authority this adoption has been construed to mean that the common law was adopted

¹² See, also, *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443; *Stowell v. Johnson*, 7 Utah 215, 26 Pac. Rep. 290; *Drake v. Earhart*, 2 Idaho 750, 23 Pac. Rep. 541; *Union Mill & Mining Co. v. Dangberg*, 81 Fed. Rep. 73; *Sternberger v. Seaton etc. Co.*, 45 Colo. 401, 102 Pac. Rep. 168; *Hager-*

man etc. Co. v. McMurry, — N. M. —, 113 Pac. Rep. 823.

¹³ For the ten States retaining the common law, see Sec. 621.

¹⁴ See modification of the common law of riparian rights, Secs. 508-512.

For history of change, see Secs. 595-626.

¹ See Sec. 587.

only so far as it is applicable to our situation, the characteristics of our country and our system of Government.² There is no com-

2 "The common law, so far as it is applicable to our situation and Government, has been recognized and adopted as one entire system. . . . It has been assumed by the Courts of justice, or declared by statute . . . as the law of the land in every State. It was imported by our colonial ancestors as far as it was applicable." 1 Kent Com. 473. See, also, pp. 472, 536.

"The common law of England was adopted by the founders of the American Colonies to a limited extent only." Curtis Com., Sec. 16.

"The common law of England is not to be taken in all respects to be that of America. Our ancestors brought with them its general principles, and claimed it as their birth-right; but they brought with them and adopted only that portion which was applicable to their position." Mr. Justice Story in *Van Ness v. Pacard*, 27 U. S. 2 Pet. 137, 7 L. Ed. 374.

"As a general proposition, so much of these (the common law principles) as were suited to the condition of a people like that of the early settlers of this country was adopted by common consent as the original common law of the Colonies." Professor Washburn in his *Law of Real Property*, p. 36.

"There is nothing in *Magna Charta*, rightly construed as a broad charter of public right and law, which ought to exclude the best ideas of all systems and of every age; and as it was the characteristic principle of the common law to draw its inspiration from every fountain of justice, we are not to assume that the forces of its supply have been exhausted. On

the contrary, we should expect that the new and various experiences of our own situation and system will mold and shape it into new and not less useful forms." Mr. Justice Mathews in *Hurtado v. California*, 110 U. S. 516, 28 L. Ed. 232, 4 Sup. Ct. Rep. 111.

See, also, *Bogardus v. Trinity Church*, 4 Paige (N. Y.) 178; *Morgan v. King*, 30 Barb. 9; *Seely v. Peters*, 10 Ill. (5 Gilm.) 130; *Boyer v. Sweet*, 4 Ill. (3 Scam.) 120; *Browning v. Browning*, 3 N. M. 659, 9 Pac. Rep. 677; *People v. Canal Appraisers*, 33 N. Y. 461; *Harkness v. Sears*, 26 Ala. 493, 62 Am. Dec. 742; *Starr v. Child*, 20 Wend. 149, where the Court said: "It is contrary to the spirit of the common law itself to apply a rule founded on a particular reason to a law, when that reason utterly fails—*Cessante ratione legis, cessat ipsa lex*."

See, also, *Inge v. Murphy*, 10 Ala. 885; *McClintock v. Bryden*, 5 Cal. 97, 63 Am. Dec. 87; *Stout v. Keyes*, 2 Doug. (Mich.) 184, 43 Am. Dec. 465; *Lindsley v. Coats*, 1 Ohio 243; *Lorman v. Benson*, 8 Mich. 18, 77 Am. Dec. 435; *Bates v. Brown*, 72 U. S. 5 Wall. 710, 18 L. Ed. 535; *Morris v. Vanderen*, 1 U. S. 1 Dall. 64, 1 L. Ed. 38; *Cox v. Matthews*, 17 Ind. 367; *Shewel v. Felt*, 3 Yeates 21; *Drake v. Rogers*, 13 Ohio St. 21; *Flanagan v. Philadelphia*, 42 Pa. 219; *Dawson v. Coffman*, 28 Ind. 220; *State v. Ca-wood*, 2 Stew. (Ala.) 360.

That certain common law rules upon the subject of waters have been repudiated in other than Western States, see *Edwards v. Charlotte, C. & A. B. Co.*, 39 S. C. 472, 22 L. R. A. 246, 39 Am. St. Rep. 746; *Martin v. Biglow*,

mon law of the United States as distinguished from that of the individual States.³

From the authorities, we are of the opinion that no legal doctrine is better settled in the United States than that such portions of the common law of England, as are not adapted to the necessities, society of our people, or the physical condition of any State or Territory of the Union, form no part of the law of that State or Territory, even if in general terms at an early day the common law was adopted as the general law of jurisprudence by that jurisdiction, and since that time there has been no specific repeal of the portion which is inapplicable. Its applicability to the physical conditions and necessities of any State or Territory of this country must be taken into consideration, bearing in mind that the common law was framed with special reference to the physical condition of a country and the needs of a people in many respects widely differing from our own. Hence it follows that the common law theories of riparian rights, especially as to the "undiminished flow" of the natural streams by the lands of riparian owners, although applicable in the country where the common law was adopted on

2 Aik. (Vt.) 184, 16 Am. Dec. 696; *Fulmer v. Williams*, 122 Pa. 191, 15 Atl. Rep. 726, 1 L. R. A. 603, 9 Am. St. Rep. 88; *Champlain & St. L. R. Co. v. Valentine*, 19 Barb. (N. Y.) 484; *Gouverneur v. National Ice Co.*, 134 N. Y. 355, 31 N. E. Rep. 865, 18 L. R. A. 695, 30 Am. St. Rep. 669, reversing *Id.*, 57 Hun, 474, 11 N. Y. Supp. 87; *Kingman v. Sparrow*, 12 Barb. 201; reversed, 1 N. Y. 242, 4 How. Prac. 467; *Buck v. Ellenbolt*, 84 Iowa 394, 51 N. W. Rep. 22, 15 L. R. A. 197.

The common law is adopted in the State of Illinois by general legislative enactment, but this must be understood only in those cases where the law is applicable to the habits and conditions of society of that State, and is in harmony with the genius, spirit, and objects of the State. *Boyer v. Sweet*, 4 Ill. (3 Scam.) 120.

See, also, *Stuart v. People*, 4 Ill.

(3 Scam.) 396; *Penny v. Little*, 4 Ill. (3 Scam.) 301; *State v. Calvin*, Charl. (Ga.) 151; *Barlow v. Lambert*, 28 Ala. 704, 65 Am. Dec. 374; *Carson v. Blazer*, 2 Bin. (Pa.) 475, 4 Am. Dec. 463; *Wagner v. Bissell*, 3 Iowa 396; *Le Barron v. Le Barron*, 35 Vt. 365; *Sackett v. Sackett*, 8 Pick. 309.

For Western cases upon the same subject, see the following sections.

3 *Wheaton v. Peters*, 33 U. S. 8 Pet. 591, 8 L. Ed. 1055; *Forepaugh v. Delaware, L. & W. R. Co.*, 128 Pa. 217, 18 Atl. Rep. 503, 5 L. R. A. 508, 15 Am. St. Rep. 672; *People v. Folsom*, 5 Cal. 374.

The common law rule of decision in a Federal Court is that of the State in which the Court is sitting. *Lorman v. Clarke*, Fed. Cas. No. 8,516, 2 McLean 568; *Pennsylvania v. Wheeling & B. Bridge Co.*, 54 U. S. 13 How. 518, 14 L. Ed. 249.

account of its damp, humid climate, is entirely inapplicable to the conditions and necessities of the arid region of the United States, of which the State of Arizona and the State of Nevada, with their scanty rainfall, hot, dry climate, and parched soil, are good examples.⁴ Furthermore, it is the rule of law that each State may adopt either the common law rule of riparian rights, or the doctrine of appropriation, or a dual system consisting of both rules as its law governing the waters flowing within its boundaries, as it shall see fit. The United States can not force either law upon a State.⁵

In the following sections, we will discuss more in detail the physical causes which led to the adoption of the Arid Region Doctrine of appropriation in all of the Western States and Territories, as at least one of the rules of law governing waters, and the abrogation of the common law of riparian rights in some of the States.⁶

§ 591. Common law deemed inapplicable—Cause of the change of rule in Nevada.—There is no better illustration to be found of the change from the law of riparian rights, after the common law governing the same had been adopted, and the direct cause of the change, than can be found in Nevada. In 1861, while Nevada was still a Territory, the common law of England was adopted by the legislature, in the following language: "The common law of England, so far as it is not repugnant to or inconsistent with the Constitution or laws of the United States, or the laws of the Territory of Nevada, shall be the rule of decision in all courts of this Territory."¹ And when Nevada became a State the above enactment was adopted in the Constitution by the following clause: "All laws of the Territory of Nevada in force at the time of the admission of this State, not repugnant to this constitution, shall remain in force until they expire by their own limitations or be altered or repealed by the legislature."² It will be noticed that

⁴ *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; *Reno etc. Co. v. Stevenson*, 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364.

See, also, dissenting opinion in *Lux v. Haggin*, 4 Pac. Rep. 929; *Willey*

v. Decker, 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

See, also, Secs. 590-594.

⁵ *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

See, also, Secs. 330, 593.

⁶ See Secs. 591-593.

¹ See Nev. Stat. 1861, p. 1.

² Const. of Nevada, Art. 17, Sec. 2.

the section is entirely silent upon the subject as to the applicability or non-applicability of the common law, or any portion thereof, to the conditions or necessities of the State of Nevada. And, when the question was first considered by the Supreme Court of the State, in the case of *Vansickle v. Haines*,³ the Court in upholding the common law rule of riparian rights according to the strict construction thereof, after quoting the section of the statute above, said: "Hence, although the common law might, in the opinion of the judges, be inapplicable, still, if not in conflict with the constitutional laws of the United States or the constitution or laws of Nevada, it must nevertheless be enforced." Later the same Court in the cases of *Jones v. Adams*,⁴ and *Reno etc. Co. v. Stevenson*,⁵ without any further enactment upon the part of the legislature of that State, overruled the case of *Vansickle v. Haines* upon the only ground that the common law of riparian rights was unsuited to the physical conditions of that State, and they were thereby entirely abrogated, and the Arid Region Doctrine of appropriation of waters for beneficial uses was adopted in lieu thereof. These decisions upon the part of the Court in the later cases have been called by an Eastern writer upon the subject, in a somewhat hysterical manner, "one of the most flagrant examples of judicial legislation that was ever perpetrated."⁶ But in view of the authorities cited in the previous sections,⁷ the Court had this power; and, owing to the fact that Nevada is one of our most arid States, the physical conditions of which are such that the common law of riparian rights is entirely inapplicable, as it was construed in the *Vansickle* case, it will have to be admitted, by all who are at all familiar with the subject, that it was better for the Court to reverse its holding, than to persist in adhering to a wrong rule.

The direct cause of the change of rule from the common law to the absolute abrogation of the law as far as the use of the waters of natural streams is concerned is stated in the following cases. In the case of *Jones v. Adams*⁸ it is said: "In all the Pacific Coast

³ 7 Nev. 249, 15 Morr. Min. Rep. 201.

⁴ 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

⁵ 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364.

⁶ Farnham on Waters and Water Rights, 1904, p. 2039.

⁷ See Secs. 588-590.

⁸ 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

States and Territories, prior to the passage of the Act of Congress of July 26, 1866, the doctrines of the common law, declaratory of the rights of riparian proprietors respecting the use of running waters, was held to be inapplicable, or applicable only to a very limited extent, to the wants and necessities of the people, whether engaged in mining, agricultural, or other pursuits; and it was decided that prior appropriations gave the better right to the use of the running waters to the extent, in quantity and quality, necessary for the uses to which the waters were applied. This was the universal custom of the Coast, sanctioned by the laws and decisions of the courts in the respective States and Territories, and approved and followed by the decisions of the Supreme Court of the United States." ⁹

Again, this doctrine was reaffirmed in the case of the Reno Smelting, Milling & Reduction Works v. Stevenson,¹⁰ wherein it was said: "It is contrary to the spirit of the common law itself to apply a rule founded on a particular reason to a law, when that reason utterly fails—*Cessante ratione legis, cessat ipsa lex*. In States where the common law has not been adopted by legislative enactment, courts have proceeded upon the hypothesis of its adoption, *subject always to its applicability to the locality*."¹¹ From these authorities we assume that the applicability of the common law rule to the physical characteristics of the State should be considered. Its inapplicability to the Pacific States, as shown in Atchison v. Peterson,¹² applies forcibly to the State of Nevada. Here the soil is arid and unfit for cultivation, unless irrigated by the waters of running streams. The general surface of the State is table land, traversed by parallel mountain ranges. The great plains of the State afford natural advantages for conducting water, and lands otherwise waste and valueless become productive by artificial irrigation. The condition of the country and the necessities of the situation impelled settlers upon the public lands to resort

⁹ Citing cases.

¹⁰ 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364.

¹¹ Citing Stout v. Keyes, 2 Doug. (Mich.) 184, 43 Am. Dec. 465; Lorman v. Benson, 8 Mich. 18, 77 Am. Dec. 435; Morris v. Vanderen, 1 U. S. 1 Dall. 64 (1 L. Ed. 38); Report of

the Judges, 3 Binn. 595; Shewel v. Fell, 3 Yeates 21; Flanagan v. Philadelphia, 42 Pa. 219; State v. Ca-wood, 2 Stew. (Ala.) 360; Inge v. Murphy, 10 Ala. 885.

¹² 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583.

to the diversion and use of waters. This fact of itself is a striking illustration and conclusive evidence of the inapplicability of the common law rule."

Again, in the later case of *Walsh v. Wallace*,¹³ upon the same proposition as to the cause of the abrogation of the doctrine of riparian rights as to the use of water and the overruling of the decision in the case of *Vansickle v. Haines*,¹⁴ the Court said: "Under two rules of the law may rights to the use of water flowing in a natural stream be acquired—under the rule of riparian rights, and under the rule of appropriation. It is conceded by counsel in this action, and it has been held by this Court that the doctrine of riparian rights is so unsuited to the conditions existing in the State of Nevada, and is so repugnant in its operation to the doctrine of appropriation, that it is not a part of the law, and does not prevail here."

§ 592. **Common law deemed inapplicable**—The present situation in California.—The Supreme Court of California since the case of *Lux v. Haggin*,¹ has been one of the most strenuous of the courts of the Western States in its adherence to the common law doctrine of riparian rights, especially as to the undiminished flow of the water in the natural streams and the use of such waters.² During the last few years, however, the views of this Court have been considerably changed upon at least two phases of the subject. First, the Court has absolutely abrogated the common law as to rights in percolating waters, in holding that instead of each land owner being entitled to all the percolating waters found upon his lands, that he had but a correlative or relative right to the percolating waters of catchment basins, and as stated by Mr. Justice Shaw in the late case upon the subject of *Katz v. Walkinshaw*,³ this was upon the ground of the inapplicability of the common law rule to the conditions in the State of California. He said: "Whenever it is found that, owing to the physical features and character of this State, and the peculiarities of its climate, soil, and productions, the application of a given common law rule

¹³ 26 Nev. 299, 67 Pac. Rep. 914,

⁹⁹ Am. St. Rep. 692.

¹⁴ *Supra*.

¹ 69 Cal. 255, 10 Pac. Rep. 674.

² See Sec. 594.

³ 141 Cal. 116, 70 Pac. Rep. 663, 74 Pac. Rep. 766, 64 L. R. A. 236, 99 Am. St. Rep. 35.

by our courts tends constantly to cause injustice and wrong, rather than the administration of justice and right, then the fundamental principles of right and justice on which that law is founded, and which its administration is intended to promote, require that a different rule should be adopted—one which is calculated to secure persons in their property and possessions, and to preserve for them the fruits of their labors and expenditures. The question whether or not the rule contended for is a part of the common law applicable to this State depends on whether it is suitable to our conditions under the rule just stated.”⁴

The second phase, upon which the Supreme Court of California has materially changed its views as to the applicability of the common law to the conditions of that State, is relative to the question of the undiminished flow of streams. And, instead of holding, as the Court did in the earlier cases, that a lower riparian owner was entitled to the undiminished flow of the stream, and that, too, without actual damage or use upon his part,⁵ the Court has materially modified its views in this respect and now holds that damage must be shown. The Court by a very recent decision,⁶ modified its views as to the flow of surface streams, and held that a riparian owner must show some damage in order to restrain an upper owner from the beneficial use of the water, and the Court also placed its decision upon the ground that the common law rule as to the undiminished flow of streams was inapplicable to the conditions of the streams, and said: “Even if at common law or under the civil law it was a part of the usufructuary right of the riparian owner to have the water flow by for no purpose other than to afford him pleasure in its prospect, such is not the rule of decision in this State. The lower claimant must show damage to justify a court of equity in restraining an upper claimant from his beneficial use of the water. The fair apportionment and economic use of the

⁴ See, also, *Wiggins v. Muscupiabe Land & Water Co.*, 113 Cal. 182, 45 Pac. Rep. 160, 32 L. R. A. 667, 54 Am. St. Rep. 337; *Harris v. Harrison*, 93 Cal. 676, 29 Pac. Rep. 325.

⁵ *Gould v. Eaton*, 117 Cal. 539, 49 Pac. Rep. 577, 38 L. R. A. 181; *Barneich v. Mercy*, 136 Cal. 205, 68 Pac. Rep. 589; *Ferrea v. Knipe*, 28 Cal.

340, 87 Am. Dec. 128; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Bliss v. Johnson*, 76 Cal. 597, 16 Pac. Rep. 542, 18 Pac. Rep. 785.

⁶ *San Joaquin etc. Co. v. Fresno etc. Co.*, 158 Cal. 626, 112 Pac. Rep. 182, 35 L. R. A., N. S., 832.

waters of this State are of the utmost importance to its development and well-being. The problems presented never came within the purview of the common law. They have been of necessity, therefore, and must continue to be solved by this Court as cases of first impression, and, as in the past, so in the future, if a rule of decision at common law shall be found unfitted to the radically changed conditions existing in this State, so that its application will work wrong and hardship rather than betterment and good, this Court will refuse to approve and follow the doctrine." ⁷

It appears to the writer from the above rulings, taken in connection with the Act of the Legislature of 1911 in amending section 1410, Civil Code,⁸ to the effect that, "all water or the use of water within the State of California is the property of the people of the State of California," that the State of California, although somewhat late, is about to adopt a new policy as to the government and control of the waters within its boundaries.⁹

§ 593. The question as to what law governs waters within the respective States is left entirely to the States to decide.—The control as sovereign,¹ of the waters within the boundaries of a State is left entirely to the State itself. Each State has the power either by legislative enactment, or by court decision, to adopt such a rule governing the waters flowing or standing therein, as it sees fit. A State may adopt the common law of riparian rights only,² as has been done in the Eastern States. And, in this connection it may limit and define the rights of riparian owners in and to the waters

⁷ See, also, *Modoc v. Booth*, 102 Cal. 151, 30 Pac. Rep. 431; *Miller v. Bay Cities Water Co.*, 157 Cal. 256, 107 Pac. Rep. 115, 27 L. R. A., N. S., 772; *Fifield v. Spring Valley Water Works*, 130 Cal. 552, 62 Pac. Rep. 1054; *Miller & Lux v. Madera Canal Co.*, 155 Cal. 59, 99 Pac. Rep. 502, 22 L. R. A., N. S., 391; *Mentone Irrigation Co. v. Redlands etc. Co.*, 155 Cal. 323, 100 Pac. Rep. 1082, 22 L. R. A., N. S., 382, 17 Am. & Eng. Ann. Cas. 1222.

See, also, as to the question of the 65—Kin. on Irr.

undiminished flow of streams, Secs. 549, 820-822.

See, also, the right of injunction against the interference with the flow of streams, Part XIII, Injunctions.

⁸ See Supplement to *Kerr's Cyc. Code*, 1911, p. 584; *Stats. & Amendments 1911*, p. 421.

⁹ See, also, Sec. 1340; also see Part XIV, California.

¹ See *United States as a riparian proprietor*, Sec. 480.

² For riparian rights only, see Secs. 450-551.

of such streams and to the soil lying under the same.³ A State may also adopt a modified form of riparian rights allowing a more extensive use of the waters of streams, especially for irrigation, than was allowed under the strict rule of the common law. This has been done in California, and some of the other Western common law States.⁴

Again, a State may entirely abrogate the common law of riparian rights, and adopt in lieu thereof the Arid Region Doctrine of Appropriation, as defined in this chapter,⁵ and as enforced, as set forth in the following chapters of this part.⁶

And, still again, a State may retain the common law of riparian rights, and at the same time adopt the Arid Region Doctrine of Appropriation, and thus have the dual systems of laws governing waters, within its jurisdiction.⁷

As far as the United States Government is concerned by those various Acts of Congress, fully discussed in future portions of this work, it has waived its rights as sovereign in and to the government and control of the waters flowing or standing within the

³ For the ownership of beds of fresh water, navigable rivers, see Secs. 328-331.

For the ownership of beds of fresh water, non-navigable rivers, see Secs. 535-542.

That the riparian rights of patentees from the United States are determined according to the law of the State in which the lands lie, see *Shively v. Bowlby*, 152 U. S. 1, 45, 38 L. Ed. 331, 14 Sup. Ct. Rep. 548; *Lowndes v. Huntington*, 153 U. S. 1, 38 L. Ed. 615, 14 Sup. Ct. Rep. 758; *Grand Rapids & I. R. Co. v. Butler*, 159 U. S. 87, 40 L. Ed. 85, 15 Sup. Ct. Rep. 991; *St. Anthony Falls Water Pr. Co. v. St. Paul W. Comrs*, 168 U. S. 349, 42 L. Ed. 497, 18 Sup. Ct. Rep. 157; *Kean v. Calumet Canal & Imp. Co.*, 190 U. S. 452, 47 L. Ed. 1134, 23 Sup. Ct. Rep. 651; *Hardin v. Shedd*, 190 U. S. 508, 47 L. Ed. 1156, 23 Sup. Ct. Rep. 685; *St. Louis v. Myers*, 113 U.

S. 566, 28 L. Ed. 1131, 5 Sup. Ct. Rep. 640; *Packer v. Bird*, 137 U. S. 661, 34 L. Ed. 819, 11 Sup. Ct. Rep. 210; *Eldridge v. Trezevant*, 160 U. S. 452, 40 L. Ed. 490, 16 Sup. Ct. Rep. 345; *St. Louis v. Rutz*, 138 U. S. 226, 34 L. Ed. 941, 11 Sup. Ct. Rep. 337; *Illinois C. R. Co. v. Illinois*, 146 U. S. 387, 36 L. Ed. 1018, 13 Sup. Ct. Rep. 110; *McGilvera v. Ross*, 215 U. S. 70, 54 L. Ed. 95, 30 Sup. Ct. Rep. 27; *Los Angeles etc. Co. v. Los Angeles*, 217 U. S. 217, 54 L. Ed. 736, 30 Sup. Ct. Rep. 452; *Schodde v. Twin Falls etc. Co.*, decided by the Supreme Court of the United States; April 1, 1912, advance sheets L. Ed. May 15, 1912, p. 470; affirming 161 Fed. Rep. 43, 88 C. C. A. 207.

⁴ See for an enlargement of the common law, Secs. 508-513.

⁵ See Secs. 586-590.

⁶ See Chaps. 32-40, Secs. 595-756.

⁷ As for the effect of dual systems, see the next section, No. 594.

boundaries of any State, and has conferred the jurisdiction of such waters upon such State.

For example, by the Act of 1866,⁸ the rights to the use of waters where "the same are recognized and acknowledged by the local customs, laws, and the decisions of the courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed."⁹ Also by the Act of February 26, 1897,¹⁰ the regulation of rates and charges for the use of waters was left entirely to the States and Territories, and that, too, where the waters were taken from reservoirs on rights of way granted by the Government under the provisions of March 3, 1891.¹¹ And, again, by the National Reclamation Act,¹² it was provided that "nothing in this Act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws."

It has also become the settled rule of law of the Federal courts that such courts will adhere to the rule that each State has the right to adopt such law or laws as it sees fit governing and controlling the waters and the use thereof within its boundaries, and that the Federal courts will follow in their decisions the rule or rules so adopted by such jurisdiction. This is true whether that rule of law is adopted by such State by statutory enactment or by decision of its highest court. In other words, such State may decide for itself, as to the applicability or inapplicability of the common law rule as applied to the physical conditions of such State; and, if such rule is determined to be inapplicable, the State, in lieu thereof, may adopt such other rule as it sees fit governing the entire subject of waters and their use within its boundaries. As was said

⁸ 7 Fed. Stat. Ann. 1905, p. 1090; U. S. Comp. Stat. 1901, p. 1556; 29
2 U. S. Comp. Stats. 1901, p. 1437; Stat. L. 599.

¹⁴ Stat. L. 253.

⁹ For the Acts of 1866 and 1870, and construction thereof, see Secs. 611-619.

¹¹ See Secs. 937-950.

¹² See Chap. 65, Secs. 1235-1286; 7 Fed. Stat. Ann. 1905, p. 1098, Sec. 8; 32 Stat. L. 388.

¹⁰ 7 Fed. Stat. Ann., p. 1098; 2

by Judge Hawley, in the case of the Union Mill & Mining Company v. Dangberg: ¹³ "Riparian rights are founded upon the ancient doctrine of the common law. If the law is a progressive science, courts should keep pace with the progress and advancement of the age, and constantly bear in mind the wants and necessities of the people and the peculiar conditions and surroundings of the country in which they live."

The State may entirely abrogate the common law rule of riparian rights and adopt the Arid Region Doctrine of Appropriation, and in connection therewith also adopt a system of State control, providing for the appropriation, administration, distribution, and use of its waters under State regulations, and under the supervision of State officials.¹⁴ In other words, this whole question is left entirely to the respective States to decide. As was said by Mr. Justice Brewer, in the opinion of the Supreme Court of the United States, in the case of *Kansas v. Colorado*: ¹⁵ "It is enough for the purposes of this case that each State has full jurisdiction over the lands within its borders, including the beds of streams and other waters." . . . "It may determine for itself whether the common law rule in respect to riparian rights or that doctrine which obtains in the arid regions of the West of the appropriation of waters for the purposes of irrigation shall control. Congress can not enforce either rule upon any State."¹⁶ Also the Supreme Court of the United States in affirming the judgment of the Supreme Court of the Territory of Arizona, which held that owing to the peculiar

¹³ 81 Fed. Rep. 73.

¹⁴ For the laws of State control, see Chap. 68, Secs. 1337-1366.

"That the State may supervise and control the appropriation, diversion, and distribution of the public waters, and impose that duty upon administrative officers, is settled by our former decisions, and is equally well settled in other States, where the doctrine of prior appropriation of water prevails." *Hamp v. State*, — Wyo. —, 118 Pac. Rep. 653.

¹⁵ 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

¹⁶ See, also, *Atchison v. Peterson*,

87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; affirming *Id.*, 1 Mont. 561; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Clark v. Nash*, 198 U. S. 361, 49 L. Ed. 1085, 25 Sup. Ct. Rep. 676; affirming *Id.*, 27 Utah 158, 75 Pac. Rep. 371, 1 L. R. A., N. S. 208, 101 Am. St. Rep. 953, 4 Am. & Eng. Ann. Cas. 1171.

See, also, *Sternberger v. Seaton Mtn. etc. Co.*, 45 Colo. 401, 102 Pac. Rep. 168.

conditions of that Territory the common law of riparian rights has never there been in force. And, in the case of *Boquillas Land & Cattle Co. v. Curtis*,¹⁷ in construing the Arizona code upon the subject, said: "But we agree with the Territorial Court that, construed with the rest of the Code, it is far from meaning that patentees of a ranch on the San Pedro are to have the same rights as owners of an estate on the Thames."

In fact, the Federal courts, including the Supreme Court of the United States, in many cases have approved and indicated their satisfaction with the laws of the State Legislatures and the decisions of the State courts, which hold that the common law doctrine has been abolished and has said that each State, without interference from the Federal courts, may for itself, as between rival individual claimants, determine which doctrine shall be therein enforced.

§ 594. The doctrine of appropriation as against riparian rights—Practical workings of the two systems as to irrigation.—A great deal has been said relative to the practical workings of the two systems of laws; namely, the Arid Region Doctrine of Appropriation and the common law of riparian rights, especially as far as their practical workings for the irrigation of lands are concerned. From our personal observations, we are very much in favor of the doctrine of appropriation and that, too, to the entire abrogation of the common law of riparian rights as to the use of the water, and especially as the doctrine of appropriation has been developed under the more modern codes of State control.¹ At the present time the principal industry in all of the Western States in the arid and semi-arid regions is that of agriculture, and in many sections of these States that of irrigated agriculture. The population of the Western States is rapidly increasing and in two of the States has more than doubled during the last decade. This rapidly increasing population, in turn, requires more of the agricultural products to sustain it. Therefore, the time is rapidly drawing near when the available water supply will have to be used to its utmost capacity to support the population of these States, much less to raise products for exportation.

¹⁷ 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493; affirming *Id.*, 11 Ariz. 128, 89 Pac. Rep. 504.

¹ For the laws of State control, see Chap. 68, Secs. 1337-1367.

Now the question arises as to which of these two systems is the best adapted for the fullest development of irrigated agriculture in this Western country. There are arguments for and against each system. Under our chapter upon the subject of irrigation as a riparian right,² we have set forth all of the rights of the riparian owner to the use of the water for the irrigation of his lands. As we have there seen, these rights are confined to riparian owners and to riparian lands and that the "right of any particular owner was only to the extent of a reasonable use of the water of the stream, after taking into consideration the rights of all the other riparian proprietors upon the same stream. We have also seen that the rights of the riparian proprietors were so limited and hemmed in by the rules and restrictions of the common law that they greatly interfered with the use of the water to its fullest capacity and therefore interfered with the development of the country. As was said by the Chief Justice of Montana in an early case:³ "The water for irrigation in this country as naturally belongs to the lands through which the stream passes, in certain proportions, as in other countries it belongs to the land to supply the necessities of life." We contend that it is the main objection to the common law of riparian rights that under that law the water is limited to riparian lands only. What if there should be more water flowing in the streams than is actually needed by the small fringe of riparian lands along the same? It is certain that without the aid of the law of appropriation in such cases it would be impossible to develop a country along agricultural lines to its fullest capacity. The Montana opinion referred to above again states: "Is it not the true policy of this Territory to enact such a system of laws here as shall distribute our short supply of water to the best advantage to all our people? The common law applied to this country is ample and sufficient to secure this much desired end." And the Chief Justice, after setting forth the principles of the doctrine of appropriation, further says as against that doctrine: "And all the consequences so disastrous in any view are to be visited upon Montana that a few individuals may have what does not now, and never did, belong to them." Again, Professor Pomeroy in his work upon riparian rights, in which he argues only from the standpoint of the common

² See Chap. 26, Secs. 498-525.

³ *Thorp v. Freed*, 1 Mont. 651.

law, said: ⁴ "After Colorado and these Territories become fully settled, especially by an agricultural population, this system of water regulation will inevitably give rise to an enormous amount of trouble, controversy, and litigation. It is impossible to conceive of legislation tending more than this to create strifes, conflicts, and breaches of the peace. The right of the prior appropriation on the public streams was a most fruitful cause of litigation in California, as shown by the great number of reported cases; but this is a feeble illustration of the litigation and controversy which must arise from the statutes of Colorado and of the various Territories when they come into full operation upon an increasing population." In another place Professor Pomeroy says: ⁵ "The doctrine of prior appropriation is completely at war with a system which recognizes, harmonizes, and protects the rights of all parties in the State." ⁶

Upon the other hand, one of the best arguments against maintaining riparian rights in an arid country where irrigation is a necessity for the production of crops is the fact that in all of the British Colonies riparian rights have been either abrogated or restricted so that they are practically abrogated and that, too, although in the mother country of England the strict rule of common law of riparian rights prevails. This is true in Egypt,⁷ in India,⁸ in Australia,⁹ in South Africa,¹⁰ and in the British Colonies of Canada.¹¹ Upon the other hand, in certain Western States of this country, which originally adopted the common law as the system of jurisprudence of those particular States, by a servile adherence to precedent, the courts have held, by a long series of cases, that the common law principles as to riparian rights were adopted

⁴ Pomeroy on Riparian Rights, p. 264.

⁵ Pomeroy on Riparian Rights, Sec. 160.

⁶ See, also, *Farmers' Irrigation District v. Frank*, 72 Neb. 136, 100 N. W. Rep. 286, wherein the Court, deprecating the unrestricted law of appropriation, says it breeds monopolies, leads to antagonism, strife, gross exactions, and abuses; is detrimental to the public welfare, and has given rise to interminable litigation.

⁷ See, also, *Irrigation as a Riparian*

Right, Chap. 26, Secs. 498-525.

See, also, *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

⁷ See *Irrigation in Egypt*, Secs. 88-102.

⁸ See *Irrigation in India*, Secs. 103-118.

⁹ See *Irrigation in Australia*, Secs. 119-130.

¹⁰ See *Irrigation in South Africa*, Secs. 131-143.

¹¹ See *Irrigation in Canada*, Secs. 177-237.

in those jurisdictions regardless of the fact whether or not they were applicable to the physical conditions of those States. As was said by Mr. Justice Holmes, speaking for the Supreme Court of the United States, in a recent case relative to the general clause adopting the common law in the Territory of Arizona: ¹² "In the first place, this is merely the adoption of a general system as against another general system (the Spanish-Mexican) that had been in force and that was repealed. . . . If there was nothing more in the code, it would be going a great way to say that such a broad phrase forbade the Courts to hold that the common law was adaptable and established the English rule of riparian rights only for the English conditions. . . . The right to use water is not confined to riparian proprietors."¹³ Such a limitation would substitute accident for a rule based upon economic considerations, and an effort, adequate or not, to get the greatest use from all available land."¹⁴ Without citing many cases we will say in all of the States where the common law of riparian rights has been abrogated, relative to the flow of the streams and the use of the water, there are positive assertions by the Supreme Courts as to the cause of this abrogation of the common law and as to why the Arid Region Doctrine of Appropriation was held to be the only doctrine which was applicable to the physical conditions of such particular States and Territories. In the Nevada case of *Twaddle v. Winters*,¹⁵ it is said: "As time passes it becomes more and more apparent that the law of ownership of water by prior appropriation for a beneficial purpose is essential under our climatic conditions to the general welfare, and that the common law regarding the flow of streams, which may be unobjectionable to such localities as the British Isles and the coast of Oregon, Washington, and Northern California, where rains are frequent and fogs and winds laden with mist from the ocean prevail and moisten the soil, is unsuitable under our sunny skies, where the lands are so arid that irrigation is required

¹² *Boquillas Land & Cattle Co. v. Curtis*, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493.

¹³ Citing *Gutierrez v. Albuquerque Land & Irrigation Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338; affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357; *Coffin v. Left Hand Ditch*

Co., 6 Colo. 443; *Willey v. Decker*, 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

¹⁴ See, also, *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

¹⁵ 29 Nev. 88, 85 Pac. Rep. 280, 89 Pac. Rep. 289.

for the support and prosperity of the people. Irrigation is the life of our important and increasing agricultural interests, which would be strangled by the enforcement of the riparian principle." And, it is further stated by the Court that the California decisions cited by the appellants upon the question of riparian rights "may no longer be considered good law even in the State in which they were rendered." ¹⁶

In all the Western States, which still adhere to the common law of riparian rights, it may be said that they do not adhere to these rights only. In every one of these States, as an adjunct, it may be said, to the common law, is also found the doctrine of appropriation of waters for beneficial uses. And in every one of these States which has these dual systems of laws governing and controlling the waters within its boundaries, it may be said that its Supreme Court has also upheld the doctrine of appropriation. It has, therefore, been held, in effect at least, that in all of these States which have these two systems of laws, they may exist together in the same jurisdiction; and in some of the States it has been positively held that the doctrine of prior appropriation may exist and be enforced in the same State with the common law doctrine of riparian rights, and that, too, in spite of their contrary fundamental principles.¹⁷

Again, it may be said that in certain of the Western States the common law as to the use of waters of natural streams has been entirely abrogated and the Arid Region Doctrine of appropriation stands alone in these States. It will be noticed that the States wherein this condition is found are those which are more arid, and water is more scarce, while those States which adhere to the dual systems of laws governing water are those that are less arid, have

¹⁶ See, also, upon the subject of the adoption of only such portions of the common law as are applicable to the conditions of any State, Secs. 587-593.

See, also, *Salt Lake City v. Salt Lake City etc. Co.*, 25 Utah 456, 71 Pac. Rep. 1069; *Reno Smelting, Milling & Reduction Works v. Stevenson*, 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364; *Drake v. Earhart*, 2 Idaho 750, 23 Pac. Rep. 541,

¹⁷ *Clark v. Allaman*, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971.

See, also, *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Crawford Co. v. Hathaway (Hall)*, 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; *Benton v. Johnson*, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; *Hough v. Porter*, 51 Ore. 318, 95 Pac. Rep. 332, 98 Pac. Rep. 1083, 102 Pac. Rep. 723.

larger streams, and, as a general thing, water is much more plentiful. As was said by the Nebraska Court: ¹⁸ "In all States which, like our own, are but partially arid the common law is in force. The States holding to the contrary rule are wholly within the arid regions."

The State of California has been heretofore the most strenuous in adhering to the common law doctrine of riparian rights as is indicated by a long line of decisions of its Supreme Court, especially those after the case of *Lux v. Haggin*,¹⁹ but that State has also adopted the doctrine of appropriation and has, therefore, the dual systems of laws governing the waters within its boundaries. In California, under the system of riparian rights, it seems that certain riparian owners by virtue of the situation of their lands upon the streams have prevented the fullest development and use of those waters. It is said by Mr. Wiel: ²⁰ "A few big riparian proprietors holding extensive ranches under Mexican grants have barred extension in some places." But, it is said that the doctrine of appropriation leads to litigation, "antagonism, strife, and dissension."²¹ It may also be said, with truth, if we are to judge from the reported cases of the California Courts, that the dual systems of laws, continually clashing with each other and themselves, lead to a far greater amount of litigation than does the doctrine of appropriation, where it stands alone. As a comparison we may cite the State of Wyoming where the doctrine of appropriation has been adopted alone, and, under its system of State control and administrative laws, is enforced. In that State there have been very few cases decided by the Supreme Court as compared to those which have been decided by the California Court. It, therefore, may be said, in contradistinction to what was said by Professor Pomeroy, that the system of riparian rights adopted in a country which is totally inapplicable to its existence does not harmonize or protect the rights of all the parties of the State.

In the third edition of Mr. Wiel will be found a note,²² which

¹⁸ *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 687.

¹⁹ 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674.

²⁰ Wiel on Water Rights in the Western States, 3d Ed., p. 129.

²¹ *Thorp v. Freed*, 1 Mont. 651.

See, also, quotation from Professor Pomeroy, *supra*; *Farmers' Irrigation Dist. v. Frank*, 72 Neb. 136, 100 N. W. Rep. 286.

²² See Wiel on Water Rights in the Western States, 3d Ed., p. 129, note.

was condensed from Section 339 of the first edition of this work, and is as follows: "The State of California, constituting a large and important part of the field where the art of irrigation is practiced, is also the great model for the rest of the region regarding the practical development of its water supply, and in the use of water as applied to the purpose of irrigation. California is not only ahead in the development of her water supply and the number, size, and boldness of design of her irrigation works, but that State is also superior to all other States and Territories of the arid West in her method of applying and utilizing the water. It is safe to say that California owes the larger portion of the prominence which it occupies today to the results of irrigation."

To the above we can only add that the State of California, owing to its rich soil, salubrious climate, energetic citizens, and comparatively ample supply of water, has continued to prosper from the time that that section was written by us to the present time. But it may be said that this is so *in spite of* its systems of laws which attempt to govern and regulate the use of the water, but which have bred more litigation upon this important subject than have nearly all of the other Western States combined. For which statement we refer simply to the number of reported cases of its Supreme Court.

The Supreme Court of the United States, in one of its latest decisions,²³ recognized the inconsistency of attempting to adhere to both the common law of riparian rights and to the Arid Region Doctrine of appropriation. Mr. Chief Justice White, in rendering the opinion of the Court, said: "The misapprehension upon which the contention rests is the assumption that because a certain character of riparian rights may exist in Idaho, therefore such rights as are absolutely incompatible with the rule of prior appropriation for beneficial use may coexist with that system."

In closing this section, we will reiterate that, in our opinion, the Arid Region Doctrine of appropriation alone, as the same is in force in those States which have also adopted the law of state control,²⁴ regulating and controlling the appropriation and use of waters

²³ *Schodde v. Twin Falls etc. Co.*, affirming *Id.*, 161 Fed. Rep. 43, 88 decided April 1, 1912, 124 U. S. 107, C. C. A. 207.

²⁴ For the laws of State control, see Chap. 68, Secs. 1337-1367.

within their boundaries for beneficial purposes, and also administering to the division of those waters as between the respective claimants, and where the common law of riparian rights is either entirely abrogated or is limited and restricted in certain ways to certain specific uses, is the doctrine best applicable not only to the States that are entirely arid, but also to the semi-arid States as well.

CHAPTER 32.

HISTORY OF DOCTRINE OF APPROPRIATION.

- § 595. Scope of chapter.
- § 596. The discovery of gold in California.
- § 597. The character of the immigrants to California.
- § 598. Mining rules and regulations.
- § 599. Introduction of element of priority.
- § 600. California Act of 1851—Proof of custom.
- § 601. Early Court decisions against doctrine.
- § 602. Early Court decisions in favor of doctrine—In general.
- § 603. Early Court decisions in favor of doctrine—Irwin v. Phillips.
- § 604. Possessors both of lands and waters at this time mere trespassers.
- § 605. The settled rule before any Act of Congress—Spread of California doctrine.
- § 606. Attempted preference first given to mining.
- § 607. All beneficial uses finally given equal footing.
- § 608. Decisions of Court judicial legislation.
- § 609. Character of title of claimants.
- § 610. California decisions based upon presumption of grant.
- § 611. Act of Congress of July 26, 1866.
- § 612. How the Act of July 26, 1866, was passed.
- § 613. Decision of the Supreme Court of the United States as to the cause of the passage of the Act of 1866—Jennison v. Kirk.
- § 614. Other decisions as to the cause of the passage of the Act of 1866.
- § 615. Act of July 9, 1870, making all patents subject to vested rights.
- § 616. Construction of Acts of 1866 and 1870—Effect of Acts on appropriations against patentees of the Government prior to 1866.
- § 617. Construction of Acts of 1866 and 1870—No new system adopted by Acts.
- § 618. Construction of Acts of 1866 and 1870—Effect of Acts as to the time the rights to water vested.
- § 619. Effect of Acts upon title of appropriators—Equivalent to a grant.
- § 620. State regulation as the result of the Acts of 1866 and 1870.
- § 621. States adopting Arid Region Doctrine of appropriation.
- § 622. Desert Land Acts of March 3, 1877, and March 3, 1891, also strengthened and confirmed doctrine of appropriation.
- § 623. Desert Land Acts—Construction of Acts confirms the right of appropriation.
- § 624. Later Acts of Congress confirming doctrine of appropriation.
- § 625. The Acts of Congress must not be construed as an absolute dedication of all the waters for appropriation.
- § 626. The result of the doctrine of appropriation.

§ 595. **Scope of chapter.**—In this chapter we will describe how the doctrine of appropriation came to be adopted in the States and then Territories of the arid and semi-arid portions of this country. We will also note the particular features of the doctrine, especially as to that subject relative to rights based upon priority, a feature that prior to that time was new in the history of water laws.

§ 596. **The discovery of gold in California.**—In 1848 gold was discovered in California, and since the voyage of the Argonauts there has been no such search for a golden fleece as this which now commanded the attention of the world. By sailing vessels and steamships over the ocean, by prairie schooners and all sorts of vehicles drawn by horses, oxen, and other draft animals, by riding and on foot, the motley throng from all parts of the earth rushed to the "diggins." Of nationalities the flow from Europe alone equaled in variety that of the medieval crusades, with notable prominence to the leading types, among which could be seen the self-complacent Briton, the methodic and reflective German, and the versatile Gaul. But all parts of the world contributed to swell the list. Africa was represented by the orthodox negro, by the swarthy Moors, and the straight featured Abyssinians. Asia and Australasia provided their share in Mongolians, lithe and diminutive Malays, the dark-skinned Hindoos, and the well formed Maoris, the Kanakas and the stately turbaned Ottoman. The ubiquitous Hebrews, ever to be found in the wake of movements offering trade profits, the Hispano-Americans, and the half naked aborigines, all were there, laboring side by side with their American brothers, the sturdy Yankees, who thronged in vast numbers from the Eastern States. The population of California, which in 1848 numbered only from five to six thousand, in 1849 numbered nearly one hundred and ten thousand souls. Scattered over a territory that belonged almost entirely to the public domain of the United States, that motley throng of people started in the West the mining industry of this country, which became and still is, in many of the Pacific States, of paramount importance, and destined, from the physical features of the country, always to remain so.

§ 597. **The character of the immigrants to California.**—Coming as these immigrants did from all countries of the world, differing

in their habits, customs, and religious ideas, restrained by no law save that of superior physical force, and not even agreeing whence the laws by which they would consent to be governed should emanate, these multitudes of men settled in every direction throughout the mining districts of the Sierra Nevada and Coast Range Mountains. The immigrants who came by sea, speaking broadly and with all due regard to exceptions, were pioneers not particularly beneficial to the settlement of an entirely new country. Belonging, as a great many did, to the criminal classes of Europe and the Eastern States, they embraced much of the abnormal and a great deal of the criminal and vicious in early California life. The better classes might build cities and organize society, but there were those among them who for a time made the cities hotbeds of vice and corruption, and converted the social fabric into a body non-descript, at the sight of which the rest of the world stood wrapped in apprehension.¹ But, fortunately for the future of California and the country at large, there was a class of people in this mad rush to the Pacific Coast to whom, even when their visions of suddenly acquired wealth had been dispelled, sober second thought and strength came; and who readily adapted themselves to the several other fields of labor from which they might wrest more surely though slowly the fortune withheld by fickle chance in the gold fields. And here the overland immigrants as a mass had the advantage in numbers and in many other respects. Coming, as the most of them did, from the small towns and villages and the farms of the interior, or from the young settlements on the Western frontier, and accustomed to a rugged and simple life, they craved less excitement. And being honest, industrious, thrifty, and self-reliant, they could readily fall back upon familiar toil and find a potent ally in the cultivation of the soil and in mechanical industries. A large proportion of this class of settlers indeed had come to California to cast their lot for all time in a Western home. And, fortunately for California and also for the great West, this latter class, living nearer to the gold fields, not only arrived upon the scene among the first but also in greater numbers than all other

¹ "Swarms of foreigners were pouring in from Mexico, South America, the Islands of the Pacific, the penal colonies of Great Britain, from Eu-

rope, and working in the mining districts." Yale, *Mining Claims and Water Rights*, 1867, p. 31.

classes put together, and at the close of the year 1849 nearly sixty thousand American citizens were upon the ground and actively engaged in building up the future State of California.

§ 598. **Mining rules and regulations.**—The American element preponderated, and the Yankee fancied himself over all with his political and commercial supremacy, the more so because he was within the confines of territory owned by his own country, which at all hazards had to be maintained and protected, to the exclusion of the laws and customs of all other nationalities. This element being full of great projects and happy devices for surmounting obstacles, even to the achieving of the seemingly impossible, and fitted no less by indomitable energy, shrewdness, and adaptability than by political and numerical rights, assumed the mastery wherever it went, and carried with it that love of order and system and of fair dealing, which is the prominent characteristic of the American people.¹ In every locality where the mines were being worked, or there was prospecting for mineral, the miners held improvised meetings and framed certain rules and regulations, based upon general custom, for their own government, for the government of all those who came into that locality, for the government of their mining claims, and also for the appropriation and use of the waters of the natural streams to work the claims. These organizations, covering as they did specific tracts of territory, are known as “mining districts,” and the rules and regulations adopted are known as the “mining rules” or “mining regulations” of the respective districts.² These miners’ rules and regulations in the different districts have a marked similarity to each other, only varying in the several districts according to the extent and character of the mines, and the amount of water flowing in the streams and its accessibility. They were very simple; and, as far as property rights were concerned, related to the acquisition, working, and retention of their mining claims, and to the appropriation and diversion of

¹ *Jennison v. Kirk*, 98 U. S. 455, 25 L. Ed. 240; *Snyder on Mines*, Sec. 77.

² “And it matters not what name is applied to them, whether it be customs, miners’ rules and regulations, or the by-laws of the district, they come to us not only in the humble garb of

custom, but as an authoritative enunciation of the mining common law of the vicinage.” *King v. Edwards*, 1 Mont. 235; *Gleeson v. Martin White M. Co.*, 13 Nev. 442; *Snyder on Mines*, Sec. 118.

the water to be used in working them. They prescribed in brief detail the acts necessary to constitute such an appropriation of mineral land or water of a stream as would give a claimant a right as against all others, the amount of work which would entitle him to the continued possession and enjoyment of the claim, and what would constitute an abandonment of these rights and others of like character. There was one principle embodied in them all, and on which rests the "Arid Region Doctrine" of the ownership and use of waters, and that was the recognition of discovery, followed by prior appropriation, as the inception of the possessor's title, and development by working the claim as the condition of its retention.

The lands all being upon the public domain of the United States the first appropriator was held to have, within certain well-defined limits, a better right than others to the claim he had taken up; and in all controversies and disputes, except as against the Government, he was regarded as the original and (unless he had abandoned his claim) absolute owner from whom title was to be traced. But the mines could not be worked without water. Without water the gold would forever remain buried in the earth or rock. Therefore it became oftentimes, when the mining claims were not on the banks of a stream or lake, an important and necessary business to carry the water to the mines in order that they might be worked. The waters of rivers and lakes were carried great distances by means of ditches and flumes, constructed with great labor and enormous expenditure of money, along the sides of mountains and through canyons and ravines, to supply communities engaged in mining as well as for agricultural and ordinary domestic consumption. But here also the first appropriator of water to be conveyed to such localities, for mining or other beneficial purposes, was recognized as having to the extent of actual use the better right. The doctrine of the common law respecting the rights of riparian owners was not considered applicable, or only in a very limited degree, to the condition of the miners in the mountains. Numerous regulations were adopted, or from their obvious justness assumed to exist, by the mining communities for the protection of these water rights and for the security of the ditches and flumes conducting the water, not only between the different appropriators, but also between them

and the holders of mining claims and the owners of lands adjoining the rivers and streams.³

It was not until 1851 that there was any legislation upon the subject of acquiring title to either mining claims or water rights, at which time, although both the mining claims and the waters were upon the public domain of the United States, the State legislature of California passed an Act relating thereto.⁴ In 1866, Congress passed the first Act relating to the sale of mineral lands on the public domain, the ninth section of which had reference to the waters appropriated, as related in this and the previous sections.⁵ So it happened, that for a period of eighteen years, from 1848 to 1866, proprietors in the mining claims and water rights to the value of many millions rested their title to the same upon only the regulations and customs of miners, which, sanctioned by the legislature and State courts of California, constituted all the law governing the property in mines and in the waters, both located upon the public domain of the United States.⁶

The Nebraska case of *Meng v. Coffey*,⁷ commenting upon the origin of the doctrine, said: "It arose in California at a time when government and law were not yet established, when there was no agricultural population and no riparian owners, and when streams could be put to no use except mining. From the necessities of the case, there being no law applicable, the miners held meetings in each district or locality, and adopted regulations by which they

³ As to the authority of miners' rules, see *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Meng v. Coffey*, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697; *Broder v. Natoma W. & M. Co.*, 101 U. S. 274, 25 L. Ed. 790; affirming 50 Cal. 621; *Yale on Mining Claims and Water Rights*, 1867, pp. 58-88; *Snyder on Mines*, pp. 55-64.

⁴ See Sec. 600.

⁵ For Act of Congress of 1866, see Secs. 611-614.

For copy of the 9th section thereof, see Sec. 611.

⁶ *Atchison v. Peterson*, 1 Mont. 561;

Id., 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Forbes v. Gracey*, 94 U. S. 762, 24 L. Ed. 313; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; reversing *Id.*, 9 N. M. 303, 51 Pac. Rep. 674; *Id.*, 184 U. S. 416, 46 L. Ed. 619, 22 Sup. Ct. Rep. 428; reversing *Id.*, 10 N. M. 617, 65 Pac. Rep. 276; *Id.*, 13 N. M. 386, 85 Pac. Rep. 393.

⁷ 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

agreed to be governed. As at that time streams could be put to no use except for mining, and as the use of large quantities of water was essential to mining operations, it became settled as one of the mining customs or regulations that the right to a definite quantity of water, and to divert it from streams or lakes, could be acquired by prior appropriation. . . . It was a crude attempt to preserve order and the general peace, and to settle customary rights among a body of men subject to no law, under which so many and so valuable rights arose that when the law stepped in it was obliged to recognize them. In this way the rule of appropriation became established in the Pacific States, in opposition to the common law, with reference to streams or bodies of water which wholly ran through or were situated upon the public lands of the United States.”

§ 599. **Introduction of element of priority.**—It was at this period of the early history of California, and in the manner described in the preceding sections, that an entirely new element was introduced as an essential requisite in the acquisition of title to water rights—the element of priority. It was based upon the maxim of equity, *Qui prior est in tempore, potior est in jure*.¹

1 In a historical statement of the case of *Titcomb v. Kirk*, 51 Cal. 289, 5 Morr. Min. Rep. 10, is to be found the following: “The gold fields on the Pacific Coast, and on the Eastern slopes of the Rocky Mountains, were situated on the public lands of the United States. These fields were also in mountainous districts through which flowed numerous rivers and small streams of water. This water was necessary to separate the gold from the earth. It had to be turned, by means of ditches, from the beds of the rivers, canyons, and ravines, where it flowed, upon the sides and summits of the hills and mountains, where the deposits of gold-bearing earth were found. These ditches or canals, many of them, extended for twenty, thirty, and forty miles, and

cost hundreds of thousands of dollars each, and were built by capitalists for the purpose of conveying and selling water to the owners of mining claims. Others were shorter, and were dug by claim owners for the purpose of conveying smaller quantities of water to particular claims. The water was at first used by conducting a few inches from the ditches into sluice boxes with riffles on the bottom, and then shoveling the earth into the boxes, where it was dissolved by the water, and, being carried down by the current, left the gold on the bottom. This method of work could only be used where the earth above the bed-rock was shallow—say, from six inches to six feet in depth. Claims of this character were soon exhausted. To work the more extensive and deep de-

This was something entirely new as far as all systems of laws of the world governing waters were concerned, as far as I have been able to ascertain. It was not included in the civil law as handed down to us from the Roman Emperors, by means of the Spaniards and Mexicans. Under that law, as we have seen, the waters of the natural streams were considered the property of the public; and, in order to secure an exclusive private right it had to be acquired by means of a concession of the Government, or through the ownership of land.² Again, it was not recognized under the common law of England, either as strictly construed under the laws of that country or those of the Eastern States of this country, or even under the Western American doctrine of riparian rights as the same is adjudicated at the present time.³ And so the element of priority, an element so essential in the acquisition of a title to water rights, under the Arid Region doctrine of appropriation, had its very inception in the rules, regulations, and customs of the

posits, where the earth and gravel are from ten to three hundred feet in depth, the 'hydraulic process,' as it is called, was adopted. To work by this process, the ditch must have considerable altitude above the mining claim. The water is turned into an iron pipe, and is ejected from a nozzle at the lower end of the pipe under a pressure of from one to three or four hundred feet against the bank of gold-bearing earth.

"Conflicts soon began to take place between the owners of mining claims, the owners of ditches, and the owners of mining claims and ditches. These were settled (before the organization of Courts) by miners' meetings, and in a short time customs were in force regulating, not only the size of mining claims, but the conflicting rights of miners and ditch owners. *The rule established was that of priority—first in time, first in right.* The legislature then provided that, in actions concerning mining claims, proof should be admitted of the customs in force at

the diggings, and that such customs should be the law when not in conflict with the laws and constitution of the State. The Courts also adopted the same rule of decision. By this rule, the constructor of a ditch could not excavate it across a mining claim which had been located before the location of the ditch, without the consent of the miner. The location of a ditch consisted in placing written notices at or near its head, and marking out its general route. When this was done, the ditch acquired a right of way, provided its projectors immediately proceeded in good faith to excavate the same and appropriate the water. By the United States statutes in force, both miners and ditch owners were trespassers on the public lands, and could have been removed by the military."

² For the rules of the civil law, see Chaps. 29, 30, Secs. 552-584.

³ For Western American doctrine of riparian rights, see Secs. 507-512.

miners at the time of the great rush for gold to what is now the State of California. It was based upon the prevailing spirit for fair play, which is always the rule wherever Americans assemble. Originally starting by the rule adopted for the inception of title to a mining claim, that the man who first made a discovery and set his stakes had a better right to the claim than those who came later, the rule was extended so as to include the water of any natural stream which had been appropriated for the purpose of working the claim, and that, too, whether the claim bordered on the stream or not. Again, the rule was extended so that the prior appropriation of the waters of the natural streams could be made for the purpose of any beneficial use; mining, irrigation, power purposes, and uses by municipalities were all included among the uses for which water could be appropriated by one having the prior right thereto. And as between all claims to the water which would otherwise be equal, these miners in their rough and ready methods enforced the right which was first in time to the extent of the appropriation, even if it took all of the water of the stream. However, if there was an amount in the stream exceeding the valid claim of the first appropriation, then the other claimants came in for their share in the exact order of their priorities to the extent of each appropriation. It must also be remembered that at this period there was no law upon the subject, which was being enforced in this section of the country, and that technically this new rule was a violation of the common law of riparian rights, which was the law of the land after the Treaty of Guadalupe Hidalgo in 1848. But the law of necessity was the only law recognized by the miners. As was said by the Supreme Court of Nebraska:⁴ "The doctrine of prior appropriation arose in California at a time when government and law were not yet established, when there were no agricultural population and no riparian owners, and when the streams could be put to no use except for mining. From the necessities of the case, there being no law applicable, the miners held meetings in each district or locality, and adopted regulations by which they agreed to be governed."⁵

⁴ Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

⁵ See, also, cases cited in last pre-

ceding sections, also in those following.

See, also, Titcomb v. Kirk, 51 Cal. 289: "By the United States stat-

Having sufficiently discussed how the doctrine of prior appropriation originated, we will now follow its history and see how the rules, regulations, and customs of the miners were crystallized into law.⁶

§ 600. **California Act of 1851—Proof of custom.**—California was admitted to the Union in 1850, and the State government organized and Courts formed. In 1851 a general statute was adopted, providing that the common law was the rule of decision in the State. In the same year there was also enacted by the legislature an Act which sanctioned the mining rules, regulations, and customs, discussed in the previous sections,¹ which rules also provided for the acquisition of the title to water rights.² The California Act of 1851 was as follows: "In actions respecting mining claims proof shall be admitted of the customs, usages, or regulations established, or in force, at the bar or diggings embracing such claims, and such customs, usages, or regulations, when not in conflict with the constitution and laws of this State, shall govern the decision of the action." This Act, slightly amended in phraseology, is still in full force.³ The substance of this statute

utes in force, both miners and ditch owners were trespassers on the public lands, and could have been removed by the military. The Government, however, did not interfere, nor did Congress pass any Act upon the subject until 1866." Yale on Mining Claims and Water Rights, pp. 58, 59, 70-88; Halleck's introduction to the translation of De Fooz, Secs. 5, 7; Snyder on Mines, Secs. 50-54, 76-83; Lindley on Mines, Sec. 40; Irwin v. Phillips, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178; Eddy v. Simpson, 3 Cal. 249, 58 Am. Dec. 408; Hicks v. Bell, 3 Cal. 219; Ortman v. Dixon, 13 Cal. 33.

⁶ See Secs. 600-625.

¹ See Secs. 598, 599.

² See Sec. 599.

³ See Sec. 748 California Code of Civil Procedure; 3 Kerr's Cyc. Codes 1273, which reads as follows: "In actions respecting mining claims, proof must be admitted of the customs, usages, or regulations established and in force at the bar or diggings, embracing such claim, and such customs, usages, or regulations, when not in conflict with the laws of this State, must govern the decision of the action."

For construction of the above, see Lux v. Haggin, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; McClintock v. Bryden, 5 Cal. 97, 63 Am. Dec. 87; St. John v. Kidd, 26 Cal. 264, 4 Morr. Min. Rep. 454; Morton v. Solambo etc. Co., 26 Cal. 533, 4 Morr. Min. Rep. 463; Table Mountain etc. Co. v. Stranahan, 31 Cal. 387.

was afterward adopted by the statutes of nearly every Western State.⁴

Thus it devolved upon the legislature of the new State of California to pass the first Act declaring these "mining customs" to be the law which should control and govern not only the acquisition and retention of mining claims, but also the acquisition and retention of water rights necessary for working the same. This enactment was based upon an entirely new principle governing the rights of water in the United States, the law of priority of appropriation, or the first in time being the first in right. But it will be noticed that the rights acquired in and to the waters of the natural streams under the rules of the miners, and sanctioned by the Act above quoted, were in direct conflict with the principles of the common law upon the subject of riparian rights, adopted by the same legislature. Hence, as there were many active lawyers upon the ground, as there always are when some great attraction draws the people to any particular locality of our country, the trouble began at once; and the "irrepressible conflict" between the common law of riparian rights and the Arid Region Doctrine of appropriation was on. That conflict has now been fought for about sixty years, and is not yet finished. However, it is undoubtedly decided that the Arid Region Doctrine of appropriation, which had its foundation in the customs of the miners, has come to stay, and in seven of the States of the West it has superseded the common law upon the subject of waters, and in all of the other Western States it is recognized as one of the systems under which rights to waters may be acquired.⁵

§ 601. Early court decisions against doctrine.—The rules and regulations of the miners, having been strengthened by the Act of the California legislature, discussed in the previous section, were in a few years approved to the fullest extent by the Courts of that State, although in some of its first decisions the Supreme

⁴ Mallett v. Uncle Sam Mining Co., 1 Nev. 188, 90 Am. Dec. 484, 1 Morr. Min. Rep. 17; Riborado v. Quang Pang etc. Co., 2 Idaho 136, 6 Pac. Rep. 125.

⁵ For the seven States which have

the Arid Region Doctrine of appropriation only, see Sec. 621.

For the seventeen States which permit appropriation under the doctrine, see Sec. 621.

For the ten States which have both systems, see Sec. 621.

Court was loth to adopt the new doctrine, relative to the acquisition of water rights, and in others it refused to do so. In the case of *Eddy v. Simpson*, decided in 1853, the District Court charged the jury on the trial below, as follows:¹ "As a general principle, the party who first uses the water of the stream is by virtue of priority of occupation entitled to hold the same. If a company or association of miners construct a ditch to convey water from a running stream for mining or other purposes, and they are the first to use the water, locate, and construct the ditch, they are legally entitled to the same as their property, to the extent of the capacity of the ditch to hold and convey the water. For, if it appears that there is more water running in the stream than the ditch of the first party can hold and convey, then any other party may rightfully take and use the surplus, and it does not matter whether the excess of water be taken from a point above or below the dam of the first party." Justice Wells, in delivering the opinion of the Supreme Court reversing the judgment below, said: "The rule laid down by the Court below, while it is a departure from all rules governing this description of property, would be impracticable in its application, and we think that it is much safer to adhere to known principles and well settled law, so far as they can be made applicable to the novel questions growing out of the peculiar enterprises in which many of the people of this State are embarked."

There are also other early cases where there was the same ruling as in the case of *Eddy v. Simpson*.²

In the case of *Hill v. Newman* ³ Mr. Justice Bryan, in delivering the opinion of the Court, said: "The right to running water is defined to be a corporeal right, or hereditament, which follows or is embraced by the ownership of the soil over which it naturally passes." ⁴

¹ *Eddy v. Simpson*, 3 Cal. 249, 58 Am. Dec. 408.

² *Supra*.

³ 5 Cal. 445, 63 Am. Dec. 140, 4 Morr. Min. Rep. 513.

⁴ Citing *Sackett v. Wheaton*, 17 Pick. 103; 1 Cruise Digest 39; Angell & Ames on Water Courses, p. 3.

It must be noted that the Justice

was in error in his statement of the common law, that the right is embraced by the ownership of the soil over which the water passes, and also in the statement that it is a corporeal hereditament. The correct rule is that the right follows the ownership of the land touching upon the water laterally. For which, see Secs. 451, 458.

§ 602. Early court decisions in favor of doctrine.—In general.—But in other cases the Supreme Court of California adopted the new doctrine, in some cases almost without discussion, as though the rule had been the settled law for ages; however, in other cases all phases of the question were most carefully considered and elaborate opinions given.¹

The grounds upon which these decisions were based are stated by Mr. Justice Heydenfeldt, speaking for the Supreme Court of

See, also, *Ramsey v. Chandler*, 3 Cal. 90, 4 Morr. Min. Rep. 240.

That the right to running water is an incorporeal hereditament, see Sec. 454.

¹ *Irwin v. Phillips*, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178; *Stiles v. Davis*, 5 Cal. 120; *Kelly v. Natoma W. Co.*, 6 Cal. 105, 1 Morr. Min. Rep. 592; *Hicks v. Bell*, 3 Cal. 219; *Maeris v. Bicknell*, 7 Cal. 261, 68 Am. Dec. 257, 1 Morr. Min. Rep. 601; *Conger v. Weaver*, 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594; *Nevada etc. Co. v. Kidd*, 37 Cal. 282; *Newman v. Hill*, 5 Cal. 445; *Sims v. Smith*, 7 Cal. 148, 68 Am. Dec. 233, 13 Morr. Min. Rep. 161; *Hill v. King*, 8 Cal. 336; *Merced M. Co. v. Fremont*, 7 Cal. 317, 327, 68 Am. Dec. 262, 7 Morr. Min. Rep. 313; *Tenny v. The Miners' Ditch*, 7 Cal. 335, 11 Morr. Min. Rep. 31; *Tuolumne Co. v. Chapman*, 8 Cal. 392, 11 Morr. Min. Rep. 34; *Parke v. Kilhman*, 8 Cal. 77, 68 Am. Dec. 310, 4 Morr. Min. Rep. 522; *White v. Todd's Valley Co.*, 8 Cal. 443, 68 Am. Dec. 338, 4 Morr. Min. Rep. 536; *McDonald v. Bear River Co.*, 13 Cal. 220, 15 Cal. 145, 1 Morr. Min. Rep. 626; *Logan v. Driscoll*, 19 Cal. 623, 81 Am. Dec. 90, 6 Morr. Min. Rep. 172; *Leigh v. Independent Ditch Co.*, 8 Cal. 328, 12 Morr. Min. Rep. 97; *Butte Canal Co. v. Vaughn*, 11 Cal. 143, 70 Am. Dec.

769, 4 Morr. Min. Rep. 552; *Nevada W. Co. v. Powell*, 34 Cal. 109, 91 Am. Dec. 685, 4 Morr. Min. Rep. 253; *Humphreys v. McCall*, 9 Cal. 59, 70 Am. Dec. 621; *Mokelumne Hill Co. v. Woodbury*, 10 Cal. 185; *Crandall v. Woods*, 8 Cal. 136, 1 Morr. Min. Rep. 604; *Tarter v. Spring Creek Co.*, 5 Cal. 395, 14 Morr. Min. Rep. 371; *Ortman v. Dixon*, 13 Cal. 33; *Priest v. Union Canal Co.*, 6 Cal. 170; *Kidd v. Laird*, 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571; *Hoffman v. Stone*, 7 Cal. 46; *Phoenix W. Co. v. Fletcher*, 23 Cal. 482, 15 Morr. Min. Rep. 185; *Morton v. Solambo Co.*, 26 Cal. 533, 4 Morr. Min. Rep. 463; *Wixon v. Bear R. Co.*, 24 Cal. 367, 85 Am. Dec. 69, 1 Morr. Min. Rep. 656; *Hill v. Smith*, 27 Cal. 476, 32 Cal. 166, 4 Morr. Min. Rep. 597; *Parks Canal Co. v. Hoyt*, 57 Cal. 44; *Farley v. Spring Valley W. Co.*, 58 Cal. 142; *Himes v. Johnson*, 61 Cal. 259; *Strait v. Brown*, 16 Nev. 317, 40 Am. Rep. 497; *Lobdell v. Simpson*, 2 Nev. 274, 90 Am. Dec. 537; *Ophir S. M. Co. v. Carpenter*, 4 Nev. 534, 97 Am. Dec. 550, 4 Morr. Min. Rep. 640; *Barnes v. Sabron*, 10 Nev. 217, 4 Morr. Min. Rep. 673; *Bear R. W. Co. v. New York M. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526; *Clough v. Wing*, 2 Ariz. 371, 17 Pac. Rep. 453; *Yale on Mining Claims and Water Rights*, 1867, pp. 154-177.

California in the case of *Irwin v. Phillips*,² and quoted in the following section,³ and also in the opinion rendered by Mr. Justice Field, then of the Supreme Court of the United States, in the case of *Jennison v. Kirk*,⁴ and discussed in a following section.⁵

§ 603. **Early court decisions in favor of doctrine—*Irwin v. Phillips*.**—One of the first decisions of the Supreme Court of California, wherein the subject was thoroughly discussed, and in fact, the leading case of this period, was that of *Irwin v. Phillips*,¹ in which Mr. Justice Heydenfeldt, in speaking for the Court, said:

“It is insisted by the appellants that in this case the common law doctrine must be invoked, which prescribes that a water course must be allowed to flow in its natural channel. But upon an examination of the authorities which support that doctrine, it will be found to rest upon the fact of the individual rights of landed proprietors upon the stream, the principle being both at the civil and common law that the owner of lands on the banks of a water course owns to the middle of the stream, and has the right in virtue of his proprietorship to the use of the water in its pure and natural condition. In this case the lands are the property either of the State or of the United States, and it is not necessary to decide to which they belong for the purposes of this case. It is certain that at the common law the diversion of water courses could only be complained of by riparian owners who were deprived of the use, or those claiming directly under them. Can the appellants assert their present claim as tenants at will? To solve this question it must be kept in mind that their tenancy is of their own creation, their tenements of their own selection, and subsequent, in point of time, to the diversion of the stream. They had the right to mine where they pleased throughout an extensive region, and they selected the bank of a stream from which the water had been already turned for the purpose of supplying the mines at another point.

2 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178.

3 See Sec. 603.

4 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 504.

5 See Sec. 613.

1 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178.

See, also, *Meng v. Coffey*, discussing the history of the doctrine, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

“Courts are bound to take notice of the political and social condition of the country which they judicially rule. In this State the larger part of the territory consists of mineral lands, nearly the whole of which are the property of the public. No right or intent of disposition of these lands has been shown either by the United States or the State governments, and, with the exception of certain State regulations, very limited in their character, a system has been permitted to grow up by the voluntary action and assent of the population, whose free and unrestrained occupation of the mineral region has been tacitly assented to by the one Government, and heartily encouraged by the expressed legislative policy of the other. If there are, as must be admitted, many things connected with this system which are crude and undigested and subject to fluctuation and dispute, there are still some which a universal sense of necessity and propriety have so firmly fixed that they have come to be looked upon as having the force and effect *res judicata*. Among these the most important are the rights of miners to be protected in the possession of their selected localities, and the rights of those who, by prior appropriation, have taken the waters from their natural bed and by costly artificial works have conducted them for miles over mountains and ravines, to supply the necessities of gold diggers, and without which the most important interests of the mineral region would remain without development. So fully recognized have become these rights that, without any specific legislation conferring or confirming them, they are alluded to and spoken of in the various Acts of the legislature in the same manner as if they were rights which had been vested by the most distinct expression of the will of the lawmakers; as, for instance, in the Revenue Act, ‘canals and water races’ are declared to be property subject to taxation, and this when there was none other in the State than such as were devoted to the use of mining. Section 2 of Article 9 of the same Act, providing for the assessment of companies and associations, among others mentions ‘dam or dams, canal or canals, or other works for mining purposes.’ This simply goes to prove what is the purpose of the argument, that however much the policy of the State, as indicated by her legislation, has conferred the privilege to work mines, it has equally conferred the right to divert streams from their natural channel; and as these two rights stand upon an equal

footing, when they conflict they must be decided by the fact of priority, upon the maxim of equity, *qui prior est in tempore, potior est in jure*. The miner who selects a piece of ground to work must take it as he finds it, subject to prior rights, which have an equal equity on account of an equal recognition from the sovereign power. If it is upon a stream, the waters of which have not been taken from their bed, they can not be taken to his prejudice; but if they have been already diverted, and for as high and as legitimate purpose as the one he seeks to accomplish, he has no right to complain, no right to interfere with the prior occupation of his neighbor, and must abide the disadvantages of his own selection."

§ 604. Possessors both of lands and waters at this time mere trespassers.—It must be remembered that at this period of the history of the doctrine, appropriations, both of the mining claims and of the waters for use thereon, were made upon the lands belonging to the United States, and Congress had not at this time made any provisions whereby the title to either the land or the water could be acquired. It must also be remembered that, at this period, those who were occupying the mineral lands of the United States and appropriated the waters upon the public domain were in fact trespassers upon such land and without any title thereto; and, at that time, they had no means of ascertaining that they ever would acquire title either to the lands or to the waters. Yet the Courts of the State of California, without any law or authority upon which to base their action, except upon "the manifest equities of the case," went ahead and rendered their decisions upholding and sustaining, *at least*, the possessory title to both the lands and the waters. These decisions were also in the face of another decision by the same Court where the opinion was rendered by Mr. Justice Field, to the effect that all the lands of the public domain and everything connected with the soil, including the waters thereon, belonged to the United States.¹

It is by the merest stroke of good fortune, or rather, through the

1 "Digging for minerals on the public domain of the United States was a trespass entitling the Government to damages in the action at law, and such waste as would be restrained by

an injunction from the Court of Chancery, pending the action at law. These rights belong to the Government as a proprietor of the land in common with an individual owner of

sense of fairness and justice of the American people through their Congress, that these mere possessory titles were afterward by the Act of Congress of 1866 ratified and confirmed, and thereby an absolute title vested in such possessors.²

§ 605. **The settled rule before any Act of Congress—Spread of California doctrine.**—As we have seen in the previous sections, by a long line of decisions, it became the settled rule in California that at least a good possessory title could be acquired to a water right by the prior appropriation of the waters of the natural streams and lakes, and their application to the working of mining claims, which had also been appropriated, or “located”; and that, too, when both these lands and waters were upon the public domain of the United States, and before Congress had made any provisions authorizing or recognizing in any manner these appropriations.¹ This doctrine soon spread to all of the States and Territories of the arid and semi-arid West, where the same necessities arose for the use of water. As was said by the Supreme Court of Nevada in a case decided in 1865:² “So far, then, as the anomalous rights and character of the miner located upon the public land for the purpose of mining are defined and established by the Courts of California, we feel it our duty to recognize them whenever their decisions may be applicable to our condition. Nearly the entire mining interest of this State has grown up under the fostering protection of the law as it was administered and recognized by the Courts of that State. To repudiate the theory and principles upon which they have acted would be to overturn the foundation upon which half of our rights rest.”³

And so it soon became the settled doctrine throughout all the

the land in the absence of protective legislation.” Yale on Mining Claims and Water Rights, p. 331.

By the United States Statutes in force both mines and ditch owners were trespassers on the public lands and could be removed by the military. *Titecomb v. Kirk*, 51 Cal. 288, 5 Morr. Min. Rep. 10.

² For the Act of Congress of 1866, see Secs. 611-614.

¹ See Secs. 600-603.

For first Act of Congress authorizing these acts, see Secs. 611-614.

² *Mallett v. Uncle Sam G. & S. M. Co.*, 1 Nev. 188, 90 Am. Dec. 484, 1 Morr. Min. Rep. 17.

³ See, also, *Sieber v. Frink*, 7 Colo. 148, 2 Pac. Rep. 901; *Thorp v. Freed*, 1 Mont. 651; *Murray v. Tingley*, 20 Mont. 260, 50 Pac. Rep. 724, 19 Morr. Min. Rep. 137; *Union M. & M. Co. v. Dangberg*, 81 Fed. Rep. 73.

West that a permanent right of property in the waters of the natural streams and lakes, which ran wholly through or were situated upon the public domain of the United States, might be acquired for mining or other beneficial purposes⁴ by the mere appropriation thereof and use for those purposes; that the prior appropriator might thus acquire the right to divert, use, and consume all of the water of the stream, if the same should be necessary for his purposes, as against all others claiming later rights. As the public domain, both the land and water, belonged to the United States, and at that time there being no authorization of Congress for these acts, it can be readily seen that these acts upon the part of the miners and others were technically trespasses against the property and rights of the United States. However, in the continuation of our history of the doctrine, it will be seen how Congress legalized these acts.⁵

§ 606. **Attempted preference first given to mining.**—During the first years of the settlement of the arid West mining was practically the only industry. And as we have seen, the Arid Region Doctrine of appropriation originated with the miners' customs,¹ it was, therefore, strenuously urged at first that water could only be appropriated for that use in mining occupations. In fact, the agricultural possibilities were at that early period of the history of the country an entirely unknown quantity, and the use of water for irrigation, where the greater portion of it was consumed, was looked upon by some of the Courts and the legislature of California as a waste of the water, especially where this use conflicted with the rights claimed by the miners. The early legislatures of the State of California, therefore, attempted to favor the miners above all others classes in the use of water.

The Act of the legislature of 1851, quoted in a previous section,² permitted the admission of proof of the "customs, usages, and regulations" in force at the bar or diggings embracing the claims involving any controversy. Again, the Act of 1852, known as the "Possessory Act," permitted those in possession of mining claims

⁴ For other purposes than that of mining, see Secs. 606, 607.

⁵ See for Act of Congress of 1866, Secs. 611-614.

¹ See Secs. 598-600.

² See Sec. 600.

on the mining lands to sue in the State Courts for interference with their possessions, with a proviso excepting the possessors of land for agriculture or grazing from protection against the miners if the land contained mines or minerals.³ And it was held that the rule rested upon its necessity for the preservation of peace and quiet in the country.⁴

Again, the Act of 1855, known as the "Indemnity Act," required the miner who entered upon the land of an agriculturist to give a bond for whatever damages might be done to the *improvements only* of the agriculturist.⁵ This Act requiring the indemnity referred to was intended to guard against the injuries resulting from the unrestricted license given by the Act of 1852, known as the "Possessory Act," and discussed above.⁶ The possession of a farmer on the public land was held evidence of title in him as to everybody but a miner;⁷ and, where a party entered on mineral land for the purpose of mining, he could not be presumed to be a trespasser, although the land was in the actual possession of an agriculturist,⁸ the theory being that the possession of the agriculturist was subject to the right previously vested in the miner, where he claimed the possession for mining operations.⁹

³ See Statutes 1852, p. 158.

⁴ See *Hubbard v. Barry*, 21 Cal. 321; *Gray v. Dixon*, 74 Cal. 508, 16 Pac. Rep. 305; *Stoakes v. Barrett*, 5 Cal. 36; *Hicks v. Bell*, 3 Cal. 219; *McClintock v. Bryden*, 5 Cal. 97, 63 Am. Dec. 87; *Burdge v. Underwood*, 6 Cal. 45; *Fitzgerald v. Urton*, 5 Cal. 308; *Yale on Mining Claims and Water Rights*, pp. 47-50.

⁵ Statute 1855, p. 145.

⁶ See *Burdge v. Underwood*, 6 Cal. 45; *Weimer v. Lowery*, 11 Cal. 104, 4 Morr. Min. Rep. 543; *Martin v. Browner*, 11 Cal. 13; *Henshaw v. Clark* and 103 Chinamen, 14 Cal. 460; *Biddle Boggs v. Merced M. Co.*, 14 Cal. 249; 70 U. S. 3 Wall. 304, 18 L. Ed. 245; *Billings v. Hall*, 7 Cal. 1; *Yale on Mining Claims and Water Rights*, pp. 50-52.

See, also, *Gillan v. Hutchinson*, 16 Cal. 153, where the Indemnity Act

was held unconstitutional. But see *Rupley v. Welch*, 23 Cal. 452, 4 Morr. Min. Rep. 243, where the Act was again upheld. See, also, *Esminger v. McIntire*, 23 Cal. 593; *Rogers v. Soggs*, 22 Cal. 444, 14 Morr. Min. Rep. 375.

⁷ *Yale on Mining Claims and Water Rights*, p. 51.

⁸ *Smith v. Doe*, 15 Cal. 100, 5 Morr. Min. Rep. 218.

See, also, *Gillan v. Hutchinson*, 16 Cal. 153, where the Indemnity Act was held unconstitutional.

⁹ *Rupley v. Welch*, 23 Cal. 452, 4 Morr. Min. Rep. 243. See the case of *Natoma W. Co. v. Hancock*, 101 Cal. 42, 55, 35 Pac. Rep. 334, criticizing this case, and where the Court said: "But in early mining times the paramount right of the miner strenuously insisted upon by the miners and in the mining sections often exercised with

§ 607. **All beneficial uses finally given equal footing.**—From an examination of the California cases of this period it will be seen that they are at considerable variance with each other upon this phase of the subject.¹ There are cases which tended to restrict the claims of the miner and to place all pursuits, especially where the use of water was required, upon an equal footing. In fact, it may be said that the Supreme Court of the State limited and restricted as far as possible the Acts of the legislature especially favoring the miners, discussed in the previous section,² and tended to place all uses of water upon an equal footing.³ So that the prior possessory right of the agriculturist was finally protected, and his water was protected even as against the miners, always provided, of course, that his appropriation was prior.⁴ And the rule was adopted, even before there was any legislation by Congress upon the subject, that a valid appropriation could be made of a water right independent of the purpose for which it was appropriated, provided that the appropriation was a prior one, and that the water was used for some useful or legitimate purpose, regardless of the fact whether that purpose was for mining, agriculture, or any other beneficial use for which water is used.⁵

a high hand, as it was by the defendants.’’

See, also, the case of *Thorp v. Freed*, 1 Mont. 651, where it was urged that the right to appropriate waters applied only where it was used for mining operations. But by a divided Court the question was left undecided.

In the case of *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583, the Supreme Court of the United States upheld the right as applied to mining, but was silent as to the right for other uses.

But in the case of *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683, the same Court held that the right also applied to irrigation.

¹ See cases cited under last section.

² See Secs. 602, 603.

³ *Fitzgerald v. Urton*, 5 Cal. 308, 12 Morr. Min. Rep. 198; *Tarter v. Spring Creek Co.*, 5 Cal. 395, 14 Morr. Min. Rep. 371; *McDonald v. Bear River & A. W. & M. Co.*, 13 Cal. 220, 15 Cal. 145, 1 Morr. Min. Rep. 626; *Wixon v. Bear River etc. Co.*, 24 Cal. 365, 85 Am. Dec. 69, 1 Morr. Min. Rep. 656; *Biddle Boggs v. Merced M. Co.*, 14 Cal. 279; 70 U. S. 3 Wall. 304, 18 L. Ed. 245; *Smith v. Doe*, 15 Cal. 100, 5 Morr. Min. Rep. 218; *Ortman v. Dixon*, 13 Cal. 33.

⁴ *Rogers v. Soggs*, 22 Cal. 444, 14 Morr. Min. Rep. 375; *Levaroni v. Miller*, 34 Cal. 231, 91 Am. Dec. 692, 12 Morr. Min. Rep. 232.

⁵ *Yale on Mining Claims and Water Rights*, p. 139; *Rogers v. Soggs*, 22 Cal. 444, 14 Morr. Min. Rep. 375; *Irwin v. Phillips*, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178.

It is the general rule today in all the States of the arid and semi-arid West, where there is no statute giving preference uses, that all uses of water are treated impartially, as far as the right of the appropriation of the same is concerned. As was said by Mr. Justice Field, in rendering the opinion of *Basey v. Gallagher*:⁶ "Ever since that decision it has been held generally throughout the Pacific States and Territories that the right to water by prior appropriation for any beneficial purpose is entitled to protection. Water is diverted to propel machinery in flourmills and sawmills, and to irrigate land for cultivation, as well as to enable miners to work their mining claims; and in all such cases the right of the first appropriator, exercised within reasonable limits, is respected and enforced."⁷

§ 608. **Decisions of court judicial legislation.**—In the study of the early history of the doctrine, the question will often arise in the mind of the student, as to whether the Courts did not exceed their province in their decisions in promulgating an entirely new doctrine upon the question of the use of waters, and the acquisition of rights therein, and that, too, contrary to the common law adopted by the State of California as its rule of jurisprudence. There is no question but that the Courts in many instances did exceed their powers upon the subject. It is within the province of the Courts to construe the laws as they exist and not make new ones, or to repeal old, existing laws. This duty comes within the legislative branch of our Government. But this usurpation of legislative functions by the Courts can be excused upon many grounds. It must be borne in mind that the judiciary of the new State of California had thrown upon it responsibilities not then or since incurred by any other State of the Union. In addition to those perplexing questions that arose in the nature of things, and especially putting into practical operation a new constitution and a new code of statutes, there was a large class of cases unknown to the jurisprudence of the other States. The mining interests

⁶ 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683.

⁷ See, also, *Natoma Water Co. v. Hancock*, 101 Cal. 42, 35 Pac. Rep. 112, 35 Pac. Rep. 334.

See, also, for the purposes for which
67—Kin. on Irr.

water may be appropriated; Secs. 690-705.

For statutes upon the subject of preference uses, see Secs. 791-794.

For the laws of the various States, see Part XIV.

of the State had grown up under the force of new and extraordinary circumstances; an unusual and entirely new method had been adopted through the miners' customs for the acquisition of title to a water right, and all in the absence of any specific and certain legislation to guide the Courts. There being no known system existing at the beginning, parties were left without any certain guide, and for that reason placed themselves in such conflicting positions that it was impossible to render any decision that would not produce great injury, not only to the losing parties immediately connected with the suit, but to great numbers of others who, though not formal parties to the record, must be deeply affected by the decision. No class of cases could have arisen more difficult of a just decision than that class of cases involving the rights to the use of water, especially where the Courts endeavored to reconcile the use as acquired under the new Arid Region Doctrine of appropriation under the miners' customs with the common law theories of riparian rights, adopted as the rule of decision in that State. Is it any wonder that the early Courts of California were compelled to adopt some new rules, which may be termed judicial legislation, for the government of these interests? Left without any direct precedent, as well as without any specific legislation, either by Congress or by the legislature of the State, the Courts were compelled to apply to this anomalous state of things the more expanded principles of equitable justice.¹ And, as we shall see in following the history of the doctrine further, the possessory rights in the mining land, and the appropriation

¹ See *Bear River etc. W. Co. v. New York M. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. Min. Rep. 526; *Conger v. Weaver*, 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594; *Yale on Mining Claims and Water Rights*, p. 139, where the author says: "There is no State legislation upon the subject of water rights for mining purposes. The complaint of the Supreme Court was, in the opinion of some of its members, that they were compelled to take the place of the legislature in framing rules in regard to water

rights. This was undoubtedly the case; the only rule adopted by the legislature touching the subject was the adoption of the common law as the rule of decision, by the Act of April, 1850. It was therefore, as the Chief Justice said, left to the Courts, and this can be admitted without injustice to the members in the days of its early organization. Whether the duty was properly performed or not under the law, their rules are now adopted by Congress, and that ought to be satisfactory to all concerned."

of the waters of the natural streams, were afterward confirmed by Congressional legislation.²

§ 609. **Character of title of claimants.**—It must be admitted at this late day that the mere possessory claimants to the mineral lands and waters, prior to the Act of 1866, had no title against the Government, which was the owner of both the lands and waters flowing thereon. Even this proposition was admitted by some of the earlier California cases, which so strenuously upheld these possessory rights. In the case of *Kidd v. Laird*¹ the Court, after holding that the Government was the riparian proprietor upon all of the waters flowing upon the public domain, said: "Upon this subject it is only necessary to consider that none of the rights involved in this controversy are founded upon a legal title, and that the safety and security of the parties require that the rights of each, as fixed by the priority and extent of their respective appropriations, should be regarded as perfect and absolute as if they had been acquired by prescription, or were held under an express grant from the riparian owner."²

Upon this proposition, in the case of *Biddle Boggs v. Merced Mining Company*,³ the Court, by Chief Justice Field, said: "That there was an implied license from the Government to mine for the precious metals upon the public land, by reason of its indulgence, if not by direct encouragement, extended to the mining population, as claimed by every miner, has been expressly denied by judicial authority."⁴

Upon the other hand, these claimants to possessory rights had no title, as against the Government of the United States, who was the owner of all the lands and waters as between each other. The first appropriator had a good title to his right of possession against all subsequent comers. These two propositions were summed up by Mr. Justice Field in his opinion in the case of *Jennison v.*

² See, for Acts of Congress confirming these rights, Secs. 611-618.

¹ 15 Cal. 161, 76 Am. Dec. 472, 4 Morr. Min. Rep. 571.

² See, also, *Lindley on Mines*, 2d Ed., Sec. 642; *Hughes v. Devlin*, 23 Cal. 501, 12 Morr. Min. Rep. 241; *Buchner v. Malloy*, 155 Cal. 253, 100

Pac. Rep. 687; *Miller v. Imperial Water Co.*, 156 Cal. 27, 103 Pac. Rep. 227, 24 L. R. A., N. S., 372.

³ 14 Cal. 279, 70 U. S. 3 Wall. 304, 18 L. Ed. 245.

⁴ See, also, *Yale on Mining Claims and Water Rights*, pp. 332, 333.

Kirk,⁵ in which he said: "The first appropriator was everywhere held to have, within certain well-defined limitations, a better right than others to the claims taken up, and in all controversies, *except as against the Government*, he was regarded as the original owner, and from whom title was to be traced."

§ 610. California decisions based upon presumption of grant.—

In view of the fact that previous to the year 1866, the date of the first Act of Congress upon the subject, this new doctrine of prior appropriation could be based upon no grant, statute, or express permission from the Federal Government directly authorizing the right of exclusive appropriation of water upon the public domain, and from the fact that the legislature of the State of California passed the following Act, "The common law of England so far as it is not repugnant to or inconsistent with the Constitution of the United States or the constitution or the laws of the State of California shall be the rule of the decisions of all the courts of this State," it seems strange that the early California decisions respecting water rights, which are directly opposed to the common law rules respecting the same, as universally understood and expounded by the Courts of England and of the United States, should be based upon "one favorite and much indulged doctrine" of the common law itself—the doctrine of presumption. Yet, in spite of the seeming inconsistency, such is the fact. Pomeroy, in his work on "Riparian Rights," seems to give the true explanation, that it was "in order to protect the vast interests which had grown up under the mining systems, and to give legal sanction to the rights thus acquired."¹

The case of *Conger v. Weaver*² is the leading case upon this theory of presumption. The case was decided in 1856, and the question was discussed with great ability by the learned Judge, Mr. Justice Heydenfeldt, who, in delivering the opinion of the Court, said: "Every Judge is bound to know the history and the leading traits which enter into the history of the country where he presides. This we have held before, and it is also an admitted doctrine of the common law. We must, therefore, know that this State has

⁵ 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 240.

² 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594.

¹ Pomeroy on Riparian Rights, Sec.

a large territory; that upon its acquisition by the United States, from the sparseness of its population, but a small comparative proportion of its land had been granted to private individuals; that the great bulk of it was land of the Government; that but little, as yet, had been acquired by individuals by purchase; that our citizens have gone upon the public lands continuously, from a period anterior to the organization of the State Government to the present time; upon these lands they have dug for gold; excavated mineral rock; constructed ditches, flumes, and canals for conducting water; built mills for sawing lumber and grinding corn; established farms for cultivating the earth; made settlements for the grazing of cattle; laid off towns and villages; felled trees, diverted water courses; and, indeed, have done, in various enterprises of life, all that is usual and necessary in a high condition of civilized development. All of these are open and notorious facts, charging with notice of them not only the Courts who have to apply the law in reference to them, but also the Government of the United States, which claims to be the proprietor of these lands; and the Government of the State, within whose sovereign jurisdiction they exist. In the face of these notorious facts, the Government of the United States has not attempted to assert any right of ownership to any of the large body of land within the mineral region of the State. The State Government has not only looked on quiescently upon this universal appropriation of the public domain for all of these purposes, but has studiously encouraged them in some instances, and recognized them in all. Now, can it be said with any propriety of reason or common sense, that the parties to these acts have acquired no rights? If they have acquired rights, these rights rest upon the *doctrine of presumption of a grant of right*, arising either from the tacit assent of the sovereign, or from the expressions of her will in the course of her general legislation, and, indeed, from both. Possession gives title only by presumption; then, when the possession is shown to be of public land, why may not any one oust the possessor? Why can the latter protect his possession? *Only upon the doctrine of presumption*, for a license to occupy from the owner will be presumed."

Referring to the opinion in the above case in the case of *Lux v. Haggin*,³ decided over 30 years after, the Court said: "The law

of California, with reference to priority of possession on the public lands, has been so long established that we are apt to forget that the whole system was built upon a presumption entertained by the Courts of a permission from the United States."⁴

"Presumptions of a fact are inferences as to the existence of some fact drawn from the existence of some other fact."⁵

So the existence of the open and notorious fact that certain waters of streams and lakes located upon the public domain of the United States had been appropriated by private parties for mining, agriculture, and various other purposes; and that enormous expenditures of money had been made in building up vast interests in conducting the water to places where it was needed; also that in the face of these open and notorious facts the Government of the United States, the proprietor of these lands and waters, had not attempted to assert any right of ownership in them, and that the State Government of California had not only looked approvingly upon this universal appropriation of said lands and waters, but had in some instances encouraged them, it was therefore held that these rights rested upon the doctrine of presumption of a grant of right, arising from the tacit assent of the Government, the owner, to the appropriation of both the lands included in the mining claims located upon the public domain, and also the appropriation of the waters of the natural streams for beneficial purposes.⁶

⁴ See, also, *Hicks v. Bell*, 3 Cal. 219; *Irwin v. Phillips*, 5 Cal. 140, 63 Am. Dec. 113, 15 Morr. Min. Rep. 178; *Broder v. Natoma Water Co.*, 101 U. S. 274, 25 L. Ed. 790; affirming 50 Cal. 621.

⁵ *Bouvier Law Dic.*, sub. Presumption; 1 *Phillips on Ev.* 156; *Rex v. Burdett*, 4 B. & A. Ald. 95; 160 Eng. Reprint 873; *Patteshall v. Turford*, 3 B. & Ad. 890, 23 Eng. C. L. 212, 110 Eng. Reprint 327; *Eldridge v. Knott*, 1 Cowper 214, 98 Eng. Rep. F. R. 1050; *Good Title v. Baldwin*, 11 East 488, 103 Eng. Rep. F. R. 1092.

⁶ As to the conflicting rights be-

tween the settlers and appropriators, see Secs. 810-823.

See *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Conger v. Weaver*, 6 Cal. 548, 65 Am. Dec. 528, 1 Morr. Min. Rep. 594; *Fitzgerald v. Urton*, 5 Cal. 308.

But see the case of *Boggs v. Merced Mining Co.*, 14 Cal. 279, 70 U. S. 3 Wall. 304, 18 L. Ed. 245, where Mr. Chief Justice Field said in rendering the opinion of the State Court: "Assuming, then, in the first place, for the purpose of this case, that the mineral belongs to the United States—has the defendant any effectual license to

Technically speaking, of course, the presumed grant or license consisted simply in the forbearance of the Government from interfering with or prohibiting these appropriations of the waters flowing upon the public domain, there never being any grant or license in fact from the Government until the Act of Congress of July 26, 1866.⁷ But whatever it may be called, a presumptive grant, license, or forbearance of the Government, the rights of persons who had constructed canals and ditches to be used in mining operations, and for the purpose of irrigation, or for any other beneficial use or purpose, in the region where such artificial use of the water was an absolute necessity, were rights which the Government had, by its conduct, recognized and encouraged and was bound to protect before the passage of the Act of 1866; and the very cause of the passage of that Act was for the purpose of protecting those rights, as will be seen when we come to the

enter upon the premises of the plaintiff and remove it? It is sometimes said, in speaking of the public lands, that there is a general license from the United States to work the mines which these lands contain. But this language, though it has found its way into some judicial decisions, is inaccurate as applied to the action, or, rather want of action, of the Government. There is no license in the legal meaning of the term. A license to work the mines implies a permission to extract and remove the mineral. Such license from an individual owner can be created only by writing, and from the General Government only by Act of Congress. It carries an interest in land, and arises only from grant. The mineral, whether a distinct possession or otherwise, constitutes part of the realty, as much so as growing timber, and no interest in it can pass except in the ordinary modes for the disposition of land. It is under the exclusive control of Congress equally with any other interest which the Government

possesses in land. But Congress has adopted no specific action on the subject, and has left the matter to be controlled by its previous general legislation respecting the public domain. And it is from its want of specific action, from its passiveness, that the inference is drawn of a general license. The most which can be said is that the Government has forborne to exercise its rights, but this forbearance confers no positive right upon the miner which would avail as a protection against the assertion of its claims to the mineral. The supposed license from the General Government, then, to work the mines in the public lands, consists in its simple forbearance. Any other license rests in mere assertion, and is untrue in fact and unwarranted in law."

⁷ For copy of this Act, and construction, see Secs. 611-619.

But in *Ortman v. Dixon*, 13 Cal. 33, it was said: "We hold the absolute property in such cases to pass by appropriation as it would by grant."

history of its passage.⁸ It was said in an Oregon case:⁹ "The right of mining for the precious metals is a franchise, and the attendant circumstances raise the presumption of a general grant from the sovereign of the privilege."

§ 611. **Act of Congress of July 26, 1866.**—It is our purpose at this point to discuss the Acts of Congress of 1866, and that of July 9, 1870, only so far as they relate to the history of the doctrine of appropriation, leaving the more thorough discussion of the Acts, their construction and effects, to other portions of this work.¹ As we have seen, the Government had by its conduct recognized the rights of persons who had appropriated the water of the streams and lakes on the public domain, and who had constructed canals and ditches to facilitate its use in mining operations and for the purpose of agriculture in the region where such artificial use of the water was a necessity. It is further true that before any Act of Congress was passed sanctioning those claims of the miners, this doctrine of prior appropriation, which at first applied only to the operations of mining, was extended to all other beneficial purposes for which water was essential—to irrigation, in promoting agriculture and horticulture, to milling, manufacturing, and municipal purposes—which uses were also recognized and encouraged by the Government as being equal.²

On the 26th day of July, 1866, there was approved an Act of Congress which confirmed the position taken by the Supreme Court

⁸ For history of the passage of the Act of 1866, see Secs. 612, 613.

See, also, *Broder v. Natoma W. & M. Co.*, 101 U. S. 274, 25 L. Ed. 790; affirming 50 Cal. 621; *Atchison v. Peterson*, 1 Mont. 561, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Forbes v. Gracey*, 94 U. S. 762, 34 L. Ed. 313; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240.

See, also, *Isaacs v. Barber*, 10 Wash. 124, 38 Pac. Rep. 871, 30 L. R. A. 665, 45 Am. St. Rep. 772; *Hill v.*

King, 8 Cal. 336, 4 Morr. Min. Rep. 533; *Bear River etc. Co. v. New York etc. Co.*, 8 Cal. 327, 68 Am. Dec. 325, 4 Morr. M. Rep. 526; *Merced M. Co. v. Fremont*, 7 Cal. 317, 327, 68 Am. Dec. 262, 7 Morr. Min. Rep. 313.

See *Mallett v. Uncle Sam M. Co.*, 1 Nev. 188, 90 Am. Dec. 484, 1 Morr. M. Rep. 17; *Sparrow v. Strong*, 70 U. S. 3 Wall. 104, 18 L. Ed. 50, 2 Morr. Min. Rep. 320.

⁹ *Gold Hill etc. Co. v. Ish*, 5 Ore. 104, 11 Morr. Min. Rep. 635.

¹ See Secs. 611-618.

² See Secs. 606, 607.

of California, and ratified all possessory rights, both in lands and waters, which were recognized and acknowledged by the local customs, laws, and decisions of the Courts, and which had vested and accrued prior to the passage of the Act.³ The ninth section of that Act reads as follows:

*"Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and decisions of Courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed; but whenever any person, in the construction of any ditch or canal, injures or damages the possession of any settler on the public domain, the party committing such injury shall be liable to the party injured for such injury or damage."*⁴

The Act of 1866 related principally to mining lands, Section 1 of which provided as follows: "Be it enacted that the mineral lands of the public domain, both surveyed and unsurveyed, are hereby declared to be *free and open* to exploration and occupation by all citizens of the United States, and those who have declared their intention to become citizens, subject to such regulations as may be prescribed by law, and subject also to the local customs or rules of miners in the several mining districts, so far as the same may not be in conflict with the laws of the United States."

It was thus, after eighteen years of constant struggle, that Congress finally acknowledged the general wisdom of the customs and regulations of the miners, which sprang from the necessities of

³ That the Act was rather a voluntary recognition of a pre-existing right of possession, constituting a valid claim to its continued use rather than the establishment of a new right, see discussion and cases cited in Secs. 612-614.

See, also, *Broder v. Natoma W. & M. Co.*, 101 U. S. 274, 25 L. Ed. 790; affirming 50 Cal. 621; *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U.

S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 685; *Forbes v. Gracely*, 94 U. S. 762, 34 L. Ed. 313; *Jenkinson v. Kirk*, 98 U. S. 453, 25 L. Ed. 240; *Isaacs v. Barber*, 10 Wash. 124, 38 Pac. Rep. 871, 30 L. R. A. 665, 45 Am. St. Rep. 772.

⁴ 7 Fed. Stat. Ann., 1905, p. 1090; 2 U. S. Comp. Stat. 1901, p. 1437; Rev. Stat. of U. S. 1878, Sec. 2339; 14 Stat. L. 523.

See, also, Chap. 51, Secs. 931-934.

the case leading up to them, and confirmed what was the inception of the Arid Region Doctrine of appropriation of the waters of the natural streams for beneficial uses or purposes. And, as in the course of time the State of California, and in fact, all of the Western portions of our country were becoming rapidly settled up, this Act prevented the destruction and confiscation of these rights, which would have been the case had the land been granted by the Government to the settlers without their recognition, and the common law rules of riparian rights strictly adhered to. But, after the passage of the Act, all subsequent patentees acquiring lands from the United States take those lands *subject* to all "vested and accrued" rights in and to the waters of the public domain appropriated by other parties prior to its enactment.

In the next section we will take up the immediate cause for the passage of the Act.⁵

§ 612. **How the Act of July 26, 1866, was passed.**—Our history of the doctrine of appropriation would not be complete if we did not give a short sketch as to how the Act of 1866 was passed. It must be remembered that at this time the Civil War had been ended but a short time and this Government emerged from the same with an enormous debt, and the country was in the throes of the "Reconstruction Period." A great many schemes had been proposed to pay off the war debt, and it was suggested by some members of Congress that the sale of the mines and the rights of the miners, which had been held up to this time by a possessory right only, should be made for this purpose. This, as can be readily seen, would have amounted to a confiscation of all of these possessory rights of the miners and others who had acquired the rights to the use of the waters of the natural streams on the public domain under the miners' customs. It was to prevent this, and not of their own initiative, that the majority of the Western members of Congress, headed by Senator William M. Stewart of Nevada,¹ endeavored, by counter measures to the bills introduced in Con-

⁵ See Sec. 612.

For the right of appropriators as against rights of settlers, see Secs. 810-823.

¹ Senator Stewart, one of the greatest public characters in the history of the Western country, died about one month before this article was written.

gress which provided in effect for this confiscation, to checkmate this proposed action, and which resulted, to the great surprise of all, in a more equitable rule for all concerned.² At this point we will abstract the history of the contest as given by that eminent writer upon the subject, Mr. Gregory Yale, who wrote his work upon the subject of "Mining Claims and Water Rights" in 1867, the year following the passage of the Act of Congress, and who was in California at the time. He says:³

"The miners of California and the States and Territories adjacent thereto have but a very inadequate idea of the imminent peril in which the pursuit in which they are engaged was placed at the commencement of the 39th Congress. Two years ago there was a strong disposition in Congress and the East generally to make such a disposition of the mines as would pay the National debt. The idea of relieving the Nation of the payment of the enormous taxes which the war had saddled upon us by the sale of the mines in the far distant Pacific Slope, about which few people here have any knowledge whatever, was the most popular that was perhaps ever started. Compelling other people to liquidate your obligations has been in all ages and in all nations a highly comfortable and popular proceeding. . . . The first bill on the subject was introduced in the Senate by Mr. Sherman of Ohio, and in the House by Mr. Julian of Indiana. Both of these measures contained most odious features. Sherman's bill went to the Committee on Public Lands, of which Mr. Stewart was a member. After much consideration it was understood that the committee would report adversely. Julian's bill received a much more favorable consideration in the House. In fact, the House went so far as to pass a resolution indorsing legislation substantially of the character contemplated in Julian's bill. After much canvassing, Mr. Conness and Mr. Stewart came to the conclusion that it was no longer safe to act on the defensive, and that it was necessary to determine what legislation would be acceptable, and to make a bold move to obtain it. The Secretary of the Treasury was then one of the strongest advocates of the sale of the mines, and appeared to be under the impression that it would yield a large

² A complete history of this contest will be found in the Congressional

Globe, 1st Session of the 39th Congress, Part IV.

³ Page 10.

revenue. The movement thus far had been encouraged by him, and it was thought that a partial success of his views would be more satisfactory to him than entire defeat. Mr. Conness accordingly suggested to him to have a bill prepared in his department which would avoid the odious provisions of the other two propositions, and get some Senator to introduce it, assuring him that a liberal measure would receive the favorable consideration of the Pacific delegation. The result was that the Secretary had prepared the second bill, introduced by Mr. Sherman, which was a great gain on the first bill. This bill went to the Committee on Mines, of which Mr. Conness was chairman and Mr. Stewart a member. After much discussion these two Senators were appointed a committee to draft a substitute, which, after several weeks of close study, resulted in the reporting of a bill substantially the same as the one which is now law."

Then, after stating the position of some of the members of the Senate upon the proposition and that it was opposed by some of the Western Senators, the author proceeds: "After being amended slightly by Mr. Stewart the bill passed the Senate. When it was first introduced the bill had no friends in the House, but after it passed the Senate some of the Pacific delegation began to regard it favorably. It should have gone in the House to the Committee on Mines, of which Mr. Higby was chairman; but Mr. Julian, who is an old member and chairman of the Committee on Public Lands, seized on the bill at once and had it transferred to his committee. Then the struggle came to get it out of that committee. Mr. Stewart addressed himself to the members of it, and got every one of them except Julian, but he was intractable. He wanted his bill to go first, and would not let this supersede it. The House, too, was canvassed, and was found to be favorably disposed, but there was no way of getting at the bill. In the meantime, Higby had passed a bill from the Committee on Mines in regard to ditches. It contained only three provisions, and bore no resemblance to the bill in question, but it related to the same subject. When this bill came to the Senate the mining bill was tacked on as a substitute, and was passed. It was then sent back to the House and went on the Speaker's table. In that condition it required a majority to refer it. To get that majority Julian exerted all his strength, but failed. The bill was passed in the

House without amendment, and became a law. This accounts for its being entitled 'An Act granting the right of way to ditch and canal owners through the public lands, and for other purposes.' . . . The result of the whole fight is the grant of all the mines to the miners, with some wholesome regulations as to the manner of holding and working them, which are not in conflict with existing mining laws, but simply give uniformity and consistency to the whole system. The escape from entire confiscation was much narrower than the good people of California ever supposed. If either of the bills originally introduced had been passed the Pacific States and Territories would have received a blow from which they would never have recovered. The Government could only have receded after the most irreparable and widespread damage had been done."⁴

In reference to the question of confiscation, we will only add that had the original bill passed, it would not only have confiscated the mines, but also the water rights used in working the mines and for other uses, and taken from the streams flowing upon the public domain. As we have seen, in previous sections of this work, these rights to water were based wholly upon the miners' customs in appropriating the waters from the streams. With the miners' rights to the mines would also have gone the rights to the water based upon the miners' customs.

§ 613. Decision of the Supreme Court of the United States as to the cause of the passage of the Act of 1866—Jennison v. Kirk.—In commenting upon the facts as to why and how the Act of 1866 was passed, Mr. Justice Field of the Supreme Court of the United States, in rendering the opinion of that Court in the case of *Jennison v. Kirk*,¹ said:

"The object of the section was to give the sanction of the United

⁴ It will be noticed that the greater portion of the Act of July 26, 1866, related to mines and mining; only the ninth section, quoted in a previous section, related to water and water rights, and rights of way for the same. See Sec. 611.

¹ 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 504.

Mr. Justice Stephen J. Field was also a historical character in the early history of California. He was a Judge of the District Court, Chief Justice of the Supreme Court of the State, and finally Associate Justice of the Supreme Court of the United States. He died in 1897.

States, the proprietor of the lands, to possessory rights, which had previously rested solely upon the local customs, laws, and decisions of the Courts, and to prevent such rights from being lost on a sale of the lands. The section is to be read in connection with other provisions of the Act of which it is a part, and in the light of matters of public history relating to the mineral lands of the United States. The discovery of gold in California was followed, as is well known, by an immense immigration into the State, which increased its population within three or four years from a few thousand to several hundred thousand. The lands in which the precious metals were found belonged to the United States, and were unsurveyed, and not open by law to occupation and settlement. Little was known of them further than that they were situated in the Sierra Nevada Mountains. Into these mountains the emigrants in vast numbers penetrated, occupying the ravines, gulches, and canyons, and probing the earth in all directions for the precious metals. Wherever they went, they carried with them that love of order and system and of fair dealing which are the prominent characteristics of our people. In every district which they occupied they framed certain rules for their government, by which the extent of ground they could severally hold for mining was designated, their possessory right to such ground secured and enforced, and contests between them either avoided or determined. These rules bore a marked similarity, varying in the several districts only according to the extent and character of the mines; distinct provisions being made for different kinds of mining, such as placer mining, quartz mining, and mining in drifts or tunnels. They all recognized discovery, followed by appropriation, as the foundation of the possessor's title, and development by working as the condition of its retention. And they were so framed as to secure to all comers, within practicable limits, absolute equality of right and privilege in working the mines. Nothing but such equality would have been tolerated by the miners, who were emphatically the lawmakers, as respects mining, upon the public lands in the State. The first appropriator was everywhere held to have, within certain well-defined limits, a better right than others to the claims taken up; and in all controversies, except as against the Government, he was regarded as the original owner, from whom title was to be traced. But the mines could not be

worked without water. Without water the gold would remain forever buried in the earth or rock. To carry water to mining localities, when they were not on the banks of a stream or lake, became, therefore, an important and necessary business in carrying on mining. Here, also, the first appropriator of water to be conveyed to such localities for mining or other beneficial purposes, was recognized as having, to the extent of actual use, the better right.

“The doctrines of the common law respecting the rights of riparian owners were not considered as applicable, or only in a very limited degree, to the condition of the miners in the mountains. The waters of rivers and lakes were consequently carried great distances in ditches and flumes, constructed with vast labor and enormous expenditure of money, along the sides of mountains and through canyons and ravines, to supply communities engaged in mining, as well as for agriculturists and ordinary consumption. Numerous regulations were adopted, or assumed to exist, from their obvious justice, for the security of these ditches and flumes and the protection of rights to water, not only between appropriators, but between them and the holders of mining claims. These regulations and customs were appealed to in controversies in the State Courts, and received their sanction; and properties to the value of many millions rested upon them. For eighteen years, from 1848 to 1866, the regulations and customs of miners as enforced and moulded by the Courts and sanctioned by the legislation of the State, constituted law governing property in mines and in water on the public mineral lands. Until 1866, no legislation was had looking to the sale of the mineral land. The policy of the country had previously been, as shown by the legislation of Congress, to exempt such land from sale. In that year the Act, the ninth section of which we have quoted, was passed. In the first section it was declared that the mineral lands of the United States were free and open to exploration and occupation by the citizens of the United States, and those who had declared their intention of becoming citizens, subject to such regulations as might be prescribed by law and the local customs or rules of miners in the several mining districts, so far as the same were not in conflict with the laws of the United States. . . . In no provision of the Act was any intention manifested to interfere with the pos-

sessory rights previously acquired, or which might be afterward acquired; the intention expressed was to secure them by a patent from the Government. The Senator of Nevada, Hon. William M. Stewart, the author of the Act, in advocating its passage in the Senate, spoke in high praise of the regulations and customs of miners, and portrayed in glowing language the wonderful results that had followed the system of free mining which had prevailed with the tacit consent of the Government. The legislature of California, he said, had wisely declared the rules and regulations of miners should be received in evidence in all controversies respecting mining claims, and, when not in conflict with the Constitution or laws of the State or of the United States, should govern their determination; and a series of wise judicial decisions had moulded these regulations and customs into 'a comprehensive system of common law, embracing not only mining law, properly speaking, but also regulating the use of water for mining purposes.' 'The miner's law,' he added, 'was a part of the miner's nature. He had made it, and he trusted it and obeyed it. He had given the honest toil of his life to discover wealth, which, when found, was protected by no higher law than that enacted by himself, under the implied sanction of a just and generous Government. And the Act proposed continued the system of free mining, holding the mineral lands open to exploration and occupation, subject to legislation by Congress and to local rules. It merely recognized the obligation of the Government to respect private rights which had grown up under its tacit consent and approval. It proposed no new system, but sanctioned, regulated, and confirmed a system already established, to which the people were already attached.' These statements of the author of the Act, in advocating its adoption can not, of course, control its construction, where there is doubt as to its meaning; but they show the condition of the mining property on the public lands of the United States, and the tenure by which it was held by miners in the absence of legislation on the subject; and thus serve to indicate the probable intention of Congress in the passage of the Act. . . . It was for the purpose of securing rights to water, and rights of way over the public lands to convey it, which were thus recognized, that the ninth section was adopted, and not to grant rights of way where

they were not previously recognized by the customary law of miners." 2

§ 614. Other decisions as to the cause of the passage of the Act of 1866.—There are also a number of other decisions rendered by various Supreme Courts, including those by the Supreme Court of the United States, which set forth the cause of the passage of the Act of July 26, 1866.¹ The Washington Court, in the case of *Benton v. Johncox*,² relative to the cause of the passage of the Act, said: "It was for the purpose of protecting the rights of appropriators of water for beneficial uses on the public lands which had vested and accrued, by virtue of local customs, laws, and decisions of the Courts, that the ninth section of the Act of Congress of July 26, 1866, the substance of which is included in Section 2339 of the Revised Statutes, was enacted. It was apparent to Congress, and, indeed, to every one, that neither local customs nor State laws nor decisions of State Courts could vest the title to public land or water in private individuals without the sanction of the owner, viz., the United States. The Government being the sole proprietor, had the right to permit the water to be taken and diverted from its riparian lands; but, when it disposed of land without reserving the water, the latter passed to its grantee free from interference thereafter by the grantor."

Again, the Nebraska Court, referring to the Act of 1866, in the case of *Meng v. Coffey*,³ said: "But it was only the same rule as that by which possession of mining claims was recognized. It was a custom intended to prevent disorder and forcible dispossession of those who had located mines." 4

Again, the Supreme Court of the United States in the case of *Ivanhoe Mining Company v. Keystone Consolidated Mining Company*,⁵ said: "Very soon after the conquest of California and its cession to the United States by Mexico, it was found to be rich in

2 Cong. Globe, 1st Sess., 39th Cong., Part IV, pp. 3225-3228.

1 For the opinion of Mr. Justice Field upon the subject, see Sec. 613.

2 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912.

3 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

68—Kin. on Irr.

4 Quoted from the decision of Mr. Justice Field, in the case of *Atchison v. Peterson*, 1 Mont. 561; *Id.*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583.

5 102 U. S. 167, 26 L. Ed. 126, 13 Morr. Min. Rep. 214.

the precious metals, and such was the rapid influx of immigrants from the Eastern States that the California population at the time it was organized as a State, in 1850, was largely composed of mining camps and settlements engaged in mining these metals. As nearly all those mines were discovered on land the title of which was vested, by the treaty, in the Government of the United States, it became important to determine what course the Government would take with regard to this new source of untold wealth. The Spanish Government, to which this territory and much other, rich in the precious metals, had once belonged, had instituted a system of laws concerning her mines by which private enterprise was invited to develop them, and a revenue secured at the same time to the Crown, which made Spain for a time the richest of the civilized governments of the world. This system Mexico had inherited and perpetuated, and there were many American statesmen who believed that, with the Territory, we had acquired the laws, which governed the production of gold from the earth. Others believed that, whether this were so or not, it would be a wise policy for the Government to secure to itself a fair proportion of the metal produced from its own ground. But while Congress delayed and hesitated to act, a swarm of enterprising and industrious citizens filled the country, and before a State could be organized had become its dominating element, with wealth and numbers and claims which demanded consideration.

“Matters remained in this condition, with slight exception, until the year 1866, when Congress passed a law by which title to mineral land might be acquired from the Government at nominal prices, and by which the idea of a royalty on the product of the mines was forever relinquished.”⁶

§ 615. **Act of July 9, 1870, making all patents subject to vested rights.**—Thus, as we have seen, in following the history of the doctrine, the prior appropriation of the water of a stream or lake upon the public domain, from the very first, after the discovery of gold in California in 1848, secured a title to the water appropriated, which was then considered good as against all the world except the United States Government. And furthermore, the Government,

⁶ See, also, *Chambers v. Harrington*, 111 U. S. 350, 28 L. Ed. 452, 4 Sup. Ct. Rep. 428.

instead of denying this right and treating it as non-existing, not only recognized it as having accrued and vested (by its forbearance from interfering and prohibiting these open and notorious acts of appropriation of water), but also, by the Statute of 1866,¹ formally acknowledged the doctrine of appropriation and made the Government title to the waters and to the lands used for rights of way for ditches and canals subject to the claims and uses of the appropriators, whose rights had vested and accrued prior to the vesting of other rights of the grantees of the Government either in the water or in the land. And so the Government having disposed of the waters on its lands, where the same had been actually appropriated, and also having given certain easement in the land for the rights of way for the ditches and canals in order to conduct the water to the place of use, it could only give to its patentees, after the passage of the Act of 1866, a title to the lands subject to any vested and accrued rights and rights of way for the construction of the ditches and canals.² This was a consequence which naturally followed from the well settled law of conveyancing. And although there was no reservation clause in the Government patents, prior to those issued after the Act of 1870, wherever the title of the United States to any portion of the public domain was thus burdened the same burden would on general principles accompany the title, if transferred to any subsequent or private owner; whoever succeeded to the title of the United States, through any mode of acquisition or conveyance, would acquire and hold it, subject to the same servitude which before existed in favor of the prior appropriator.³

But it has not been left as a matter of inference. By an Act of July 9, 1870, Congress in supplementing the Statute of 1866 provided:

"All patents granted, or pre-emptions or homesteads allowed, shall be subject to any vested and accrued water rights, or rights

¹ For Act of 1866, see Sec. 611.

² Pomeroy on Riparian Rights, Secs. 16, 25; Lux v. Haggin, 69 Cal. 255,

⁴ Pac. Rep. 919, 10 Pac. Rep. 674;

Osgood v. El Dorado W. Co., 56 Cal. 571, 5 Morr. Min. Rep. 37.

See, also, Copp's Mining Dec. 1873, 1874,

See, also, for discussion as to rights of way granted under the Acts of 1866 and 1870, Secs. 931-934.

³ Pom. Rip. Rights, Sec. 25; Osgood v. El Dorado W. Co., 56 Cal. 571, 5 Morr. Min. Rep. 37.

*to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by the preceding section."*⁴

§ 616. **Construction of Acts of 1866 and 1870—Effect of Acts on appropriations against patentees of the Government prior to 1866.**—The United States being the owner of the public domain, and, of course, as incident thereto the waters flowing thereon, an appropriator of those waters, prior to the year 1866, did not acquire any legal title to the same as against the Federal Government or its grantee, who obtained his patent prior to 1866, the date of the first Act of Congress confirming the claims made by appropriation.¹ But it was held that in cases where the rights by appropriation had vested and accrued prior to the Act of Congress of 1866, and also prior to the rights of the grantees of the Government, that these were rights which "the Government had, by its conduct, recognized and encouraged and was bound to protect before the passage of the Act of 1866."² It has never been held by the Supreme Court of the United States, or by the Supreme Court of California, that an appropriation of water on the public lands of the United States after the act of Congress of July 26, 1866, or the amendatory and declaratory Act of 1870, gave to the appropriator the right to the water appropriated as against the grantee of riparian lands upon the same stream under a grant made or issued *prior* to the Act of 1866, except in a case where the water, so subsequently appropriated, was reserved by the special terms of such grant. And it has been held by the Supreme Courts of California and Nevada that one who acquired a title to riparian lands from the United States prior to the Act of Congress of July 26, 1866, could not, in the absence of special reservation in his grant, be deprived of his common law rights to

⁴ 7 Fed. Stat. Ann. 1905, p. 1096;
2 U. S. Comp. Stat. 1901, p. 1437; U.
S. Rev. Stat. 1878, Sec. 2340; Act of
July 9, 1870, 16 Stat. L. 218.

For the construction of this Act,
see Secs. 616-620.

¹ See Sec. 611.

² Broder v. Natoma W. Co., 101 U.

S. 274, 25 L. Ed. 790; affirming 50
Cal. 621; Jones v. Adams, 19 Nev.
78, 6 Pac. Rep. 442, 3 Am. St. Rep.
788.

See, also, Sec. 613.

For appropriation as against ripa-
rian owners, see Secs. 810-823.

the natural flow of the stream as it was wont by Nature by one who had appropriated its waters after the passage of that Act.³

In the case of *Lux v. Haggin*, decided by the Supreme Court of California,⁴ Mr. Justice McKinstry, in giving the opinion of the Court relative to the principle that a patent issued prior to the Act of Congress of July 26, 1866, for riparian lands upon a stream was not subject to an appropriation of the waters of the same stream made prior to the issuance of the patent, referred approvingly to the rule as laid down by the Supreme Court of Nevada in the case of *Vansickle v. Haines*, and said: "In *Vansickle v. Haines*, the plaintiff had diverted one-fourth of the water of Daggett Creek in the year 1857. He made the diversion on a point then on the public land, but which in 1864 was patented by the United States to the defendant Haines. In 1865 Vansickle obtained a patent for his own land where he used the water. In 1867 Haines constructed a wood flume on his land and turned into it all of the waters of the stream, thereby depriving the plaintiff of that part of it which he had been using. The Supreme Court of Nevada held that the plaintiff by his appropriation of water *prior* to the date of the defendant's patent acquired no right which could affect that grant, and that while the Act of Congress of July, 1866, protected those who at that time were diverting water from its natural channels on the public lands, and while all patents issued or titles acquired from the United States since that date are obtained subject to the rights of water by appropriation existing at that time, yet with respect to patents for riparian lands issued *before the Act of Congress* the patentee had already acquired the right to the flow of the water, with which Congress could not interfere."⁵ In other words the decision held that any one claiming the water of a stream which was upon the public domain simply by the appropriation of the same, no matter how beneficial or necessary the use to which it

³ *Osgood v. El Dorado Water Co.*, 56 Cal. 571, 5 Morr. Min. Rep. 37; *Lux v. Haggin*, 69 Cal. 255, 4 Pac. Rep. 919, 10 Pac. Rep. 674; *Vansickle v. Haines*, 7 Nev. 249, 15 Morr. Min. Rep. 201; afterwards overruled in *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

⁴ 69 Cal. 255, 10 Pac. Rep. 674.

⁵ *Vansickle v. Haines*, 7 Nev. 249,

15 Morr. Min. Rep. 201; afterwards overruled, upon the theory that the common law of riparian rights was inapplicable in that State. *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

See, also, *Reno Smelting etc. Works v. Stevenson*, 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364.

was applied, acquired no vested right as against the Government or its grantees, unless he still continued to appropriate the water to his own use until after the Act of Congress of 1866 without the water being claimed by some riparian owner who had received his patent to the land *prior* to said Act. But in reference to other appropriators and grantees of the Government who received their patents after the said Act of Congress of 1866, the first appropriator's title to the water was good. And it was further held that those who had appropriated the waters on the public lands prior to the Act of 1866 were not treated by the Government as trespassers, but as thereby licensed; but that they had acquired no title which could be asserted against the United States or its grantees.⁶ This construction of the effect of these Acts, as can be readily seen, rendered it very uncertain as to the title to the water where it was appropriated prior to the passage of the Acts. At this period the common law of riparian rights was in force in all States and Territories and it was not abolished in certain jurisdictions until afterwards.⁷ The correct construction of these Acts as regards this phase of the subject undoubtedly is that the Acts could not be construed to be retroactive in effect, so as to affect the rights of those who had acquired their patents to the land prior to the time of the passage of the Acts, where the patents were granted without any reservations, even where the appropriation was made prior to the inception of the rights of the settlers or others so acquiring the absolute title to the land. A grant of the land without any reservations, in these cases, also granted all of the incidents thereto.⁸ However, the question of the rights of appropriation as against the rights of patentees to the land, where the patents were obtained prior to the passage of the Act of 1866, has now become obsolete from the fact that all such claims have long since been adjusted; and,

⁶ Union M. & M. Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Id.* v. Dangberg, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; *Id.*, 81 Fed. Rep. 73.

See, also, Thorp v. Freed, 1 Mont. 651; Chicago etc. Co. v. McPhillamey, — Wyo. —, 118 Pac. Rep. 682.

⁷ For the States abolishing the com-

mon law of riparian rights, see Secs. 507, 621.

For the States adhering to the dual laws of waters, see Secs. 507, 621.

⁸ Union M. & M. Co. v. Ferris, 2 Sawy. 176, Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Id.* v. Dangberg, 2 Sawy. 450, Fed. Cas. No. 14,370, 8 Morr. Min. Rep. 113; *Id.*, 81 Fed. Rep. 73; Thorp v. Freed, 1 Mont. 651.

therefore, no extended discussion is necessary here regarding them. We will now take up the construction of the Acts in question as to the rights granted under them for appropriation of water, both prior and subsequent to the time of the passage of the Acts, and against which the subject of the rights of those receiving patents prior to the Acts is not involved.⁹

§ 617. **Construction of Acts of 1866 and 1870—No new system adopted by Acts.**—The Acts of Congress of 1866 and 1870 were not intended to, and did not adopt any new system governing the right to the use of waters, by its appropriation from the natural stream or other bodies flowing over the public domain, or for the acquisition of rights of way over the public lands for ditches and canals for the purpose of conducting the water to the place of use, than had been in actual practice by the miners and settlers in the Western part of this country for at least 18 years prior to 1866, the date of the passage of the first Act.¹ Neither was there any change of policy adopted by the General Government in enacting these laws, from what had been its policy during the years before their enactment, by its acquiescence in, and the encouragement of the doctrine of appropriation. Such an acquiescence in, and recognition and encouragement of, all vested rights that the Supreme Court of the United States held they were not under the necessity of relying on the statute for their protection, but which the Government had, by its conduct, recognized and encouraged and was bound to protect even before the passage of the Act of 1866.² The Acts themselves were very brief and contained but two short sections, and instead of adopting any new rule, they simply recognized, sanctioned, acknowledged, and confirmed the general system already recognized and acknowledged and established by the local customs, laws, the decisions of the Courts, and by statutory enactment, and provided for the continuation of that system in the future.³ As stated by the Supreme Court of the United States: "The effect of this statute was to recognize, so far as the United States are concerned,

⁹ See Secs. 618, 619.

¹ For the history of the doctrine of appropriation, see Secs. 596-615.

For rights of way over the public lands, see Secs. 927-971.

² *Broder v. Natoma W. Co.*, 101 U. S. 274, 25 L. Ed. 790; affirming *Id.*, 50 Cal. 621.

³ That the Acts were prospective in effect, see Secs. 618, 619.

the validity of the local customs, laws, and decisions of Courts in respect to the appropriations of water.”⁴

As was said by Mr. Justice Miller in delivering the opinion of the Court in *Broder v. Natoma Water & Mining Co.*:⁵ “We are of the opinion that it is the established doctrine of this Court that rights of miners, who had taken possession of mines and worked and developed them, and the rights of persons who had constructed canals and ditches to be used in mining operations and for purposes of agricultural irrigation, in the region where such artificial use of the water was an absolute necessity, are rights which the Government had, by its conduct, recognized and encouraged and was bound to protect before the passage of the Act of 1866, and that section of the Act which we have quoted was rather a voluntary *recognition of a pre-existing right of possession*, constituting a valid claim to its continued use, than the establishment of a new one. This subject has so recently received our attention, and the grounds on which this construction rests are so well set forth in the following cases, that they will be relied on without further argument.”⁶

And, as stated by the Supreme Court of Nevada: “We are of the opinion that the ninth section of the Act of Congress confirmed to the owners of water rights on the public lands of the United States the same rights which they held under the local customs,

⁴ *United States v. Rio Grande Dam etc. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

See, also, *Atchison v. Peterson*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 504; *Howell v. Johnson*, 89 Fed. Rep. 556; *Mohl v. Lamar C. Co.*, 128 Fed. Rep. 776; *Krall v. United States*, 79 Fed. Rep. 241, 24 C. C. A. 543, 48 U. S. App. 351; *Van Dyke v. Midnight Sun etc. Co. (Alaska)*, 77 Fed. Rep. 90; *Maffet v. Quine*, 93 Fed. Rep. 347; *Morris v. Bean*, 123 Fed. Rep. 618.

“They intended no new, other, or

different rights than such as existed at the time of their adoption.” *United States v. Conrad Inv. Co.*, 156 Fed. Rep. 123; affirmed, 161 Fed. Rep. 829, 88 C. C. A. 647; *Scott v. Toomey*, 8 S. D. 639, 67 N. W. Rep. 838; *Cave v. Tyler*, 133 Cal. 566, 65 Pac. Rep. 1089.

⁵ 101 U. S. 274, 25 L. Ed. 790; affirming 50 Cal. 621, 5 Morr. Min. Rep. 33.

⁶ Citing *Atchison v. Peterson*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452, 1 Morr. Min. Rep. 683; *Forbes v. Gracey*, 94 U. S. 762, 34 L. Ed. 313; *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240.

laws, and decisions of the Courts prior to its enactment; that the Act of Congress did not introduce, and was not intended to introduce, any new system, or to evince any new or different policy upon the part of the General Government; that it recognized, sanctioned, protected, and confirmed the system already established by the customs, laws, and decisions of Courts, and provided for its continuance.⁷

But the Acts did not grant any right not "recognized and acknowledged by the local customs, laws, and decisions of the courts."⁸ However, the purpose of Congress was to recognize the legislation of a Territory as well as of a State.⁹

§ 618. Construction of Acts of 1866 and 1870—Effect of Acts as to the time the rights to water vested.—The claims relative to the use of water by appropriation which were affected by the

⁷ Jones v. Adams, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788; overruling Vansickle v. Haines, 7 Nev. 249.

See, also, Reno etc. Works v. Stevenson, 20 Nev. 269, 21 Pac. Rep. 317, 4 L. R. A. 60, 19 Am. St. Rep. 364; City of Denver v. Mullen, 7 Colo. 345, 3 Pac. Rep. 693; Barnes v. Sabron, 10 Nev. 217, 4 Morr. Min. Rep. 673; Carson v. Gentner, 33 Ore. 512, 52 Pac. Rep. 506, 43 L. R. A. 130; Benton v. Johncox, 17 Wash. 277, 49 Pac. Rep. 495, 39 L. R. A. 107, 61 Am. St. Rep. 912; Isaacs v. Barber, 10 Wash. 124, 38 Pac. Rep. 871, 30 L. R. A. 665, 45 Am. St. Rep. 772; Brosnan v. Harris, 39 Ore. 148, 65 Pac. Rep. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649; Sullivan v. Northern Spy M. Co., 11 Utah 438, 40 Pac. Rep. 709, 30 L. R. A. 186; Hough v. Porter, 51 Ore. 318, 95 Pac. Rep. 732, 98 Pac. Rep. 1083, 102 Pac. Rep. 728; Crawford Co. v. Hathaway (Hall), 67 Neb. 325, 93 N. W. Rep. 781, 60 L. R. A. 889, 108 Am. St. Rep. 647; Parkersville D. Dist. v. Wattier, 48 Ore. 332, 86 Pac. Rep. 775, where the Court said: "The

Act of Congress of July 26, 1866, authorizing the diversion of water flowing through the public domain, was the acknowledgment of a previous right instead of the creation of a new one."

"It was only the same rule as that by which possession of mining claims was recognized." Meng v. Coffey, 67 Neb. 500, 93 N. W. Rep. 713, 60 L. R. A. 910, 108 Am. St. Rep. 697.

"The customs alluded to in the Act of 1866 are the customs alluded to in the history of the doctrine of appropriation already given." Clark v. Alaman, 71 Kan. 206, 80 Pac. Rep. 571, 70 L. R. A. 971; Osgood v. El Dorado etc. Co., 56 Cal. 571, 5 Morr. Min. Rep. 37; Jacob v. Day, 111 Cal. 578, 44 Pac. Rep. 243; Pomeroy on Riparian Rights, Secs. 17, 28.

⁸ Titcomb v. Kirk, 51 Cal. 288, 5 Morr. Min. Rep. 10; Osgood v. El Dorado W. Co., 56 Cal. 571, 5 Morr. Min. Rep. 37.

⁹ Gutierrez v. Albuquerque etc. Co., 188 U. S. 553, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338; affirming 10 N. M. 177, 61 Pac. Rep. 357.

Acts of 1866 and 1870 may be divided into two classes: First, those claims which by priority of possession had vested and accrued prior to the time of the passage of the Act of 1866, and against which the rights of patentees who had received their patents prior to the Act were not involved;¹ and, second, those claims which by priority of possession vested and accrued subsequent to the passage of the Act; and, of course, where the claims under each class were recognized and acknowledged by the local customs, laws, and decisions of the Courts. As to the rights under the first class, the statute provides that their possessors and owners "shall be maintained and protected in the same." The Act of 1866 therefore ratified, validated, and confirmed all the water rights then existing at the time of its passage, whenever the same were held by a priority of possession and were recognized and acknowledged by the local customs, laws, and decisions of the Courts.²

The greatest effect which the Acts had was in regard to the second class of claims mentioned above, or those claims to the right to the use of the water which vested and accrued subsequent to the passage of the Act of 1866. Although both the original Act of 1866 and that of 1870, amending and supplementing the first Act,³ had in view chiefly the protection of existing appropriations rather than future ones,⁴ it was but very shortly after their passage that they were construed by the Courts to apply as well to all appropriations in the future, which were also prior in time and were also recognized and acknowledged by the local customs, laws, and de-

¹ For effect of Acts as against patentees of the Government prior to 1866, see Sec. 615.

² For rights of way granted under the Acts, see Rights of Way, Secs. 931-934.

See the cases cited in the previous section.

"In other words, the United States, by the section, said that whenever rights to the use of water by priority of possession had become vested and were recognized by the local customs, laws, and decisions of the courts, the owners and possessors should be protected in them." *Jefferson v. Kirk*, 98 U. S. 453, 25 L. Ed. 240, 4 Morr. Min. Rep. 504; *Broder v. Natoma W.*

Co., 101 U. S. 274, 25 L. Ed. 790, 5 Morr. Min. Rep. 33, affirming 50 Cal. 621; *Atchison v. Peterson*, 87 U. S. 20 Wall. 507, 22 L. Ed. 414, 1 Morr. Min. Rep. 583; *Basey v. Gallagher*, 87 U. S. 20 Wall. 670, 22 L. Ed. 452.

One of the objects of the Act of 1866 was the confirmation of all existing water rights. *Hobart v. Ford*, 6 Nev. 77.

See, also, *Jacob v. Lorenz*, 98 Cal. 332, 33 Pac. Rep. 119.

³ For these Acts, see Secs. 611, 615.

⁴ "The protection of existing rights against national spoliation was the primary object." *Wiel on Water Rights*, 2d Ed., 1908, p. 26.

cisions of the Courts. In other words, the Court construed the Act of Congress of 1866 to be prospective in its operation, and to apply to all appropriations made in the future. This was decided by the Federal Court as early as 1872,⁵ and since that date it has been construed many times to the same effect by the Courts. And, thus it happened that under this liberal construction of these Acts, they not only recognized and protected existing claims, the rights to which had vested prior to the passage of the Act of 1866, but they also now recognize and protect all such claims which have vested under the same rules since the date of the passage of the Act down to the present time. In other words, the Act not only recognized the individual claims then existing, but it also recognized the *system* under which the right to these claims was acquired, which we have designated as the Arid Region Doctrine of appropriation, and declared that system to be a valid method under which existing rights to water, and rights of way for the purpose of conducting the water to the place of use, had been acquired, and under which others might be acquired in the future. As said by Mr. Justice Brewer, in rendering the opinion of the Supreme Court of the United States, in a case decided in 1899, "The effect of this statute was to recognize, so far as the United States are concerned, the validity of the local customs, laws, and decisions of Courts in respect to the appropriation of water."⁶ Again,

⁵ The Act of Congress of July 26, 1866, 14 Stat. L. 253, is prospective in its operation. *Union M. & M. Co. v. Ferris*, 2 Sawy. (U. S.) 176, 24 Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90.

See, also, *Beaver Brook Res. Co. v. St. Vrain Res. Co.*, 6 Colo. App. 130, 40 Pac. Rep. 1066.

The Act applies to water rights accrued since as well as before its passage. *Jacob v. Lorenz*, 98 Cal. 332, 33 Pac. Rep. 119.

We may be excused in remarking, in passing, that this construction of the courts probably did more toward the material building up of this Western country than any other construction of any law by any court.

⁶ U. S. v. *Rio Grande etc. Co.*, 174

U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

"It recognized, sanctioned, protected, and confirmed the system already established by the customs, laws, and decisions of courts, and provided for its continuance." Chief Justice Hawley, in *Jones v. Adams*, 19 Nev. 78, 6 Pac. Rep. 442, 3 Am. St. Rep. 788.

See, also, *Gutierrez v. Albuquerque etc. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 N. M. 177, 61 Pac. Rep. 357; *Union M. & M. Co. v. Ferris*, 2 Sawy. (U. S.) 176, 24 Fed. Cas. No. 14,371, 8 Morr. Min. Rep. 90; *Beaver Brook Res. Co. v. St. Vrain Res. Co.*, 6 Colo. App. 130, 40 Pac. Rep. 1066; *Jacob v. Lorenz*, 98 Cal. 332, 33 Pac. Rep. 119;

as said by Mr. Justice Peckham in another case: "The Government enacts that any one *may* go upon its public lands for the purpose of procuring water, digging ditches for canals, etc., and when rights have become vested and accrued which are recognized and acknowledged by the local customs, laws, and decisions of Courts, such rights are acknowledged and confirmed."⁷ And again, as said by Mr. Justice Brown in still another case: "But in order to establish any rights under the statute it was incumbent upon the defendants to prove their priority of possession; or at least to disprove priority on the part of the plaintiff. The question, Who had acquired this priority of possession? was not a Federal question, but a pure question of fact, upon which the decision of the State Court was conclusive."⁸ The Court thus recognized the validity of the laws of the State of Utah under which the rights were claimed and also held that the decision of its Supreme Court was conclusive under those laws as to the respective rights of the parties. It is to be noted that the rights claimed in all of these cases vested and accrued long subsequent to the Act of 1866. And, although the language in the Broder case, one of the early cases

Brosnan v. Harris, 39 Ore. 148, 65 Pac. Rep. 867, 54 L. R. A. 628, 87 Am. St. Rep. 649.

"It has, as we interpret this law, authorized any person wishing to construct a canal or ditch for mining or agricultural purposes to construct it over any public land." *Hobart v. Ford*, 6 Nev. 77, 15 Morr. Min. Rep. 236.

As was said in the case of *Gold Hill etc. Co. v. Ish*, 5 Ore. 104, 11 Morr. Min. Rep. 635, by the Oregon Court: "By this Act the mineral lands of the public domain, both surveyed and unsurveyed, are declared to be free and open to exploration and occupation to all citizens of the United States, and those who have declared their intentions to become citizens, subject to such regulations as may be prescribed by law. . . . Whatever difference of opinion may exist as to the tenure by which mining claims were held

prior to the passage of this Act of Congress, it is clear that, by the Act, the general Government extended to all in possession of mining claims, and to all subsequently locating and denouncing mines containing precious metals, a guarantee of protection in their occupancy so long as the mines are operated and worked."

⁷ *Bear Lake etc. Co. v. Garland*, 164 U. S. 1, 41 L. Ed. 327, 17 Sup. Ct. Rep. 7; affirming *Id.*, 9 Utah 350, 34 Pac. Rep. 368.

⁸ *Telluride etc. Co. v. Rio Grande W. R. Co.*, 175 U. S. 639, 44 L. Ed. 305, 20 Sup. Ct. Rep. 245, dis. writ 16 Utah 125, 51 Pac. Rep. 146. The same language was adopted by Mr. Justice McKenna in a second appeal of the same case. See 187 U. S. 569, 47 L. Ed. 307, 23 Sup. Ct. Rep. 178, dis. writ 23 Utah 22, 63 Pac. Rep. 995.

before the Supreme Court of the United States, seems to limit the effect of the Act to claims existing at the time of the passage of the Act, by stating "the section of the Act which we have quoted was rather a voluntary recognition of a pre-existing right of possession, constituting a valid claim to its continued use, than the establishment of a new one,"⁹ the question as to the rights of parties which had vested subsequent to the passage of the Act was not raised in the case. The rights in that case had vested in 1853, and the Court simply confined its opinion to the facts in that particular case, which comes under the first class of claims discussed in the first part of this section. However, in the case of *Jennison v. Kirk*, where the ditch in controversy was constructed in 1873, its validity was not questioned.¹⁰

In the face of the later decisions of the Supreme Court of the United States from which we quoted, as well as the universal construction of the Acts of 1866 and 1870, holding to the effect that all claims which have vested subsequent to the passage of the Acts, where the other conditions were in accordance with the law, were valid, it is not stating it too strongly to slightly change the language used by the Court in the *Border* case and quoted above, that the Act of 1866 was rather a voluntary recognition of a pre-existing *system* of appropriation, constituting a valid right to its continued operation, than the establishment of a new one. And it has thus become a part of the law of the land, of which every citizen is entitled to avail himself, and of which every purchaser from the United States is bound to take notice. The Arid Region Doctrine of appropriation thus established was not a temporary thing, to pass out of existence as soon as the rights of appropriation, which had vested prior to the Act of 1866, had been adjusted. But, as we have said, it was born out of the necessities of our conditions in the Arid West.¹¹ It was the growth of years, and permanent in its character. And the Acts of 1866 and 1870 fixed the status of water rights acquired by appropriation with respect to the public lands of the United States, both where those rights had vested and accrued prior to the passage of the Acts, and also subsequent thereto

⁹ *Broder v. Natoma W. Co.*, 101 U. S. 274, 25 L. Ed. 790, affirming 50 Cal. 621.

¹⁰ *Jennison v. Kirk*, 98 U. S. 453, 25 L. Ed. 240.

See, also, *Jacob v. Lorenz*, 98 Cal. 332, 33 Pac. Rep. 119.

¹¹ For physical conditions causing passage of Acts, see Secs. 588, 589.

even down to the present time, for these Acts are still in our statutes and in full force and effect.

§ 619. **Effect of Acts upon title of appropriators—Equivalent to a grant.**—The effect of the Acts of Congress of 1866 and 1870 upon the rights claimed by possessors was that of a direct grant by the United States to the claimant where the claimant was complying with the local laws, customs, and statutes of the State within which the claim was made. As was said by the Supreme Court of the United States in construing the Act of 1870 in the case of *Broder v. Natoma Mining Co.*:¹ "As to the canal of the defendant, so far as it ran through the land of the United States, at the date of this Act it was an *unequivocal grant* of the right of way, if it was no more."² It is to be noted that under the same Act, it provided that possessors of mining claims might upon complying with the terms of the Act, acquire a patent to such claims. But, upon the other hand, no provisions were made in the Act for acquiring a patent to water rights, although it is held to be the universal rule that where a claimant has complied with local customs, rules, and regulations, and statutory laws of the State wherein the claim is made, that he receives a title to such right to the use of water or to the right of way over the public land of the United States which is in effect the same as though he had received a patent therefor.

§ 620. **State regulation as the result of the Acts of 1866 and 1870.**—One of the results of the Acts of Congress of 1866¹ and 1870² in all of the States and Territories of the Western portion of the country where water was being appropriated and used under the Arid Region Doctrine, laws were enacted by the legislatures

¹ 101 U. S. 274, 25 L. Ed. 790, affirming 50 Cal. 621, 5 Morr. Min. Rep. 33.

² See, also, *Smith v. Hawkins*, 110 Cal. 122, 42 Pac. Rep. 453, 19 Morr. Min. Rep. 243; *Smith v. Denniff*, 24 Mont. 20, 60 Pac. Rep. 398, 50 L. R. A. 737, 81 Am. St. Rep. 408; *Wood v. Etiwanda Water Co.*, 122 Cal. 152, 54 Pac. Rep. 726; *Welch v. Garrett*, 5 Ida. 639, 51 Pac. Rep. 405, 19 Morr. Min. Rep. 193; *Woodruff v. North*

Bloomfield etc. M. Co., 18 Fed. Rep. 753, 9 Sawy. 441; *Union Mill & Mining Co. v. Ferris*, 2 Sawy. 176, Fed. Cas. No. 14,372, 8 Morr. Min. Rep. 90; *Farley v. Spring Valley etc. Co.*, 58 Cal. 142; *Cottonwood Ditch Co. v. Thom*, 39 Mont. 115, 121, 101 Pac. Rep. 825, 104 Pac. Rep. 281.

¹ For copy of Act of 1866, see Sec. 611. For construction of Act, see Secs. 613-619.

² For copy of Act, see Sec. 615.

providing how the water might be appropriated,³ for what purposes it might be used,⁴ what changes might be made in the appropriation or use,⁵ and how these rights might be maintained or lost,⁶ and other provisions which seemed necessary in the respective jurisdictions to the enforcement of the doctrine.⁷

In general it may be said that these early laws were simple and usually merely adopted the main principles of appropriation as evolved by the early miners of California and sustained by the Supreme Court of that State, and afterwards ratified by the Acts of Congress of 1866 and 1870. Some of these original Acts are still in existence at the present time; others have been superseded by later and more elaborate codes upon the subjects of water and water rights. And, in fact, in most of the States, it can be said that during the last decade elaborate codes governing the whole subject of the acquisition of the right and use of water for irrigation and other purposes have been enacted. All of these laws as they exist today will be discussed in later portions of this work.⁸ The California law upon the subject was adopted in 1872, and contained but 13 sections, the majority of which are still in existence and in full force and effect.⁹ The statutes enacted in the other States and Territories were usually enacted after the adoption of the California statutory provisions relative to the acquisition of water rights. In the then Territory of Wyoming, however, and prior to the adoption of the California statute, the legislature passed an Act based upon the early California decisions upon the subject and providing for the appropriation and use of the waters within that Territory.¹⁰ The Constitution of Colorado, adopted in 1876, declares the water of every natural stream not theretofore appropriated, within the State of Colorado, to be the property of the public.¹¹ Its code of irrigation laws afterwards followed. The

³ See Secs. 706-732.

⁴ See Secs. 690-705.

⁵ See Secs. 856-873.

⁶ See Secs. 1099-1120.

⁷ See the laws of the respective States in this respect, in Part XIV.

How water is appropriated, see Secs. 706-732.

⁸ See Secs. 706-732, 1337-1367.

⁹ See Secs. 1410-1422, Cal. Civil Code, 2 Kerr's Cyc. Codes, pp. 1137-1165.

¹⁰ See Laws of Wyo., 1869, pp. 310, 311.

See, also, Willey v. Decker, 11 Wyo. 496, 73 Pac. Rep. 210, 100 Am. St. Rep. 939.

See, also, Irrigation in Wyoming, Part. XIV.

¹¹ See Irrigation in Colorado, Part XIV.

See, also, dedication by a State of its waters to the public, Secs. 372-389.

constitutional provisions of Colorado were largely followed in the constitutions of Wyoming and Idaho.¹² And so it continued until all of the Western States and Territories had adopted some legislation authorizing the appropriation of the waters of the natural streams within their respective jurisdictions for beneficial purposes.¹³

§ 621. States adopting Arid Region Doctrine of appropriation.

—In every Western State there are in force laws which adopted the Arid Region Doctrine of appropriation, at least as one of the systems of laws within their respective jurisdictions, governing and controlling waters, the acquisition of water rights, and the use of the water. We have classified these States in a previous section of this work,¹ and to recapitulate here, we will state that there are 18 States which are formed out of the arid and semi-arid regions of the United States, which have adopted the Arid Region Doctrine of appropriation of waters for beneficial uses. These are, including the District of Alaska: Alaska, Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

In seven of these States, which are located within the very heart of the arid region, the common law of riparian rights, as to the flow of natural streams, and the use of the waters thereof, has been absolutely abrogated by statute or Court decision. These are Arizona, Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming.

In 11 of these States, counting Alaska, they have both systems, the Arid Region Doctrine of appropriation, and the common law of riparian rights. These are: Alaska, California, Kansas, Montana, Nebraska, North Dakota, Oklahoma, Oregon, South Dakota, Texas, and Washington.²

As we have seen in previous sections of this work, each State had the power to adopt either system or both systems governing the laws of the waters flowing within its boundaries. The Federal Gov-

¹² For irrigation in Wyoming, see Part XIV.

For irrigation in Idaho, see Part XIV.

¹³ See irrigation in the various states, Part XIV.

¹ See Sec. 507.

² See also, for classification, Sec. 507.

See, also, for the subject of riparian rights in the discussion of the laws of the respective States, in Part XIV.

ernment has left this subject entirely to each State to decide and, as stated by Mr. Justice Brewer in the case of *Kansas v. Colorado*; each State "may determine for itself whether the common law rule in respect to riparian rights or that doctrine which obtains in the arid regions of the West of the appropriation of waters for the purposes of irrigation, shall control. Congress can not enforce either rule upon any State."³

§ 622. Desert Land Acts of March 3, 1877, and March 3, 1891, also strengthened and confirmed doctrine of appropriation.— Congress did not let the subject of the Arid Region Doctrine of appropriation rest with the Acts of 1866 and 1870, which we have discussed in the previous sections.¹ By the Act of March 3, 1877, which was afterwards amended by the Act of March 3, 1891, Congress still further confirmed and strengthened the doctrine. Throughout all portions of the Arid West there were vast tracts of vacant and so-called "desert land," which still remained unsettled.² The lands along the streams and upon which the water could be easily conveyed were becoming rapidly taken up, but the desert land, as a general thing, lay further back from the stream upon the benches and mesas and upon which it was harder to conduct the water. These lands, although designated in the Act as desert, were in fact far from being such. Because they were covered with the wild growth of that part of the country is no indication of their desert character, but just the opposite. They were in fact no more desert from this fact than the lands of Ohio or Indiana, which were also covered with wild growth of trees and other vegetation. The soil of these lands was as rich as that of any lands to be found in any part of the country, regardless of their peculiar growth of sage brush and grease wood. It is the land which has no wild growth at all which must be considered desert. And these very lands have since, with the application of water for irrigation, become some of the most productive in the whole country. But the idea prevailed in Congress that these lands were desert and barren and practically worthless; but that there was a bare possibility that something might be done with them which, in a way, would make

³ *Kansas v. Colorado*, 206 U. S. 46,
51 L. Ed. 956, 27 Sup. St. Rep. 655.
See, also, Sec. 593.

69—Kin. on Irr. 82

¹ See Secs. 611-619.

² For the distinction between arid and desert land, see Sec. 5.

them produce something. And so, as an extra inducement, the "Act to provide for the sale of desert lands in certain States and Territories" was first passed in 1877. This Act was afterwards amended in 1891 in some particulars, and as so amended is now the law upon the subject.³

It is not our intention to discuss in all of their details the Desert Land Acts in this portion of our work, but we will leave this to another chapter.⁴ The particular features of the Acts to which we wish here to call special attention are the provisions which are confirmatory to and strengthen the Arid Region Doctrine of appropriation, first sanctioned and ratified by Congress by the Acts of 1866 and 1870, and discussed in the previous sections.⁵ The Act, after providing for the filing of the declaration by an applicant for a tract of desert land,⁶ stating therein that he intends to reclaim the tract of land by conducting water upon the same within a period of three years thereafter, further provides: "That the right to the use of the water by the person so conducting the same on or to any tract of desert land (specified) shall depend upon *bona fide prior appropriation*; and that such right shall not exceed the amount of water *actually appropriated, and necessarily used for the purpose of irrigation and reclamation.*" At this point the Act leaves the rights of the particular claimant, and provides generally for the rights of all appropriators of water for useful purposes in the following language: "And all surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and *be held free for the appropriation* and use of the public for irrigation, mining, and manufacturing purposes subject to existing rights." Thus by this Act

³ See Fed. Stat. Ann., 1905, pp. 392-396, 2 U. S. Comp. Stat., 1901, pp. 1548-1552, Act of March 3, 1877, Ch. 107, 19 Stat. L. 377; Act of March 3, 1891, Ch. 561, 26 Stat. L. 1096, 1097.

For full text of the Act, see Sec. 1290.

For the acquisition of land and the right to water thereunder, see Secs. 1290-1308.

For the disposal of desert lands to individuals, see Sec. 444, 1296-1308.

For the effect of the Desert Land Act upon the riparian rights of settlers, see Secs. 549, 1295.

⁴ For the full discussion of the Desert Land Acts and their construction, see Chap. 66, Secs. 1287-1311.

⁵ See Secs. 611-619.

⁶ For the essentials for acquiring a tract of desert land, see Secs. 1296-1308.

all surplus water, or water to which vested rights had not theretofore attached, was absolutely dedicated by the United States, as proprietor, to the public or to individuals of the public, for the use for all beneficial purposes, the title to which might be acquired by appropriation.⁷

§ 623. **Desert Land Act—Construction of Act confirms the right of appropriation.**—The Desert Land Act¹ in no way repealed the previous Acts of Congress of 1866 and 1870 granting the right of appropriation of the waters flowing over the public domain, and discussed in our previous sections.² Neither did it add anything new to the previous Acts, as to the method of acquiring water rights by appropriation, or the extent of those rights, and it may be considered as simply confirmatory of the earlier statutes of Congress in this respect.³ There was one thing, however, which the Act did, and that was to still further declare the policy of the United States, through its Congress, that all waters flowing over the public domain, where rights to the same had not previously vested, as far as the United States were concerned as the proprietor thereof, were subject to the right of appropriation for beneficial uses. The portion of the proviso inserted in the first section of the Act that "All surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and be held free for appropriation and use of the public," for the purposes named, was not necessary, or in fact pertinent to the filing of the declaration of an applicant for a desert land entry, to which the rest of the section relates. And this part of the proviso is a direct expression of the will of Congress that all the public waters then remaining might be so taken and used for beneficial purposes, but subject always to existing rights.⁴ Hence the only possible construction of this portion of

. 7 For the United States as political sovereign, see Sec. 448.

For the right of the respective States to adopt such laws governing waters as they see fit, see Secs. 590, 593.

1 See previous Sec. 622.

For full copy of Act, see Sec. 1290.

2 See Secs. 611-619.

3 For the discussion as to the effect that the Act had upon riparian rights, see Sec. 549.

See, also, *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083.

4 That the water might be appropriated through the intermediary of a corporation, see *Gutierrez v. Albuquerque etc. Co.*, 188 U. S. 545, 47 L.

the Act of 1877 is that it was an additional confirmation and consent to the Arid Region Doctrine of appropriation. As was said by the Court in a Wyoming case: "If any consent of the General Government was primarily requisite to the inception of the rule of prior appropriation, that consent is to be found in the several Acts of Congress, beginning with the Act of July 26, 1866, and including the Desert Land Act of March 3, 1877."⁵ We do not think that this Act went to the extent, as seems to be held in a recent Oregon case,⁶ to repeal the common law of riparian rights in those Western States which also adhere to that rule; neither could it go to that extent. The United States, as the owner and proprietor of all of the unappropriated waters flowing over its public lands, simply released its claim to these waters, where it did not interfere with navigation or with its own uses,⁷ and left the sovereign jurisdiction to the laws of the States and Territories through which they flow. And each State may determine for itself as to the rule of law which shall govern the waters within its boundaries, whether it shall be the common law of riparian rights or the Arid Region Doctrine of appropriation, or both rules. Congress can not abrogate the law of riparian rights where a State law provides for the same. Neither can Congress "enforce either rule upon any State."⁸

It is, however, as we have discussed in a previous section, within the power of the Supreme Court of Oregon to reject the common

Ed. 588, 23 Sup. Ct. Rep. 338, affirming 10 New Mex. 177, 61 Pac. Rep. 357.

See, also, *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083; *United States v. Rio Grande etc. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Spokane Valley etc. Co. v. Arthur D. Jones & Co.*, 53 Wash. 37, 101 Pac. Rep. 515; *Williams v. Altnow*, 51 Ore. 275, 95 Pac. Rep. 200, 97 Pac. Rep. 539; *Davis v. Chamberlain*, 51 Ore. 304, 98 Pac. Rep. 154; *United States v. Conrad Inv. Co.* 156 Fed. Rep. 123; *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *Winters v. United States*, 143 Fed. Rep. 740, 74 C. C. A. 546,

207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207; *Boquillas Land & Cattle Co. v. Curtis*, 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493, affirming *Id.*, 11 Ariz. 128, 89 Pac. Rep. 504.

⁵ *Farm Inv. Co. v. Carpenter*, 9 Wyo. 110, 61 Pac. Rep. 258, 50 L. R. A. 747, 87 Am. St. Rep. 918.

⁶ *Hough v. Porter*, 51 Ore. 318, 98 Pac. Rep. 1083.

⁷ For interference with navigation, see Secs. 350-356.

United States as a riparian proprietor, see Sec. 480.

See, also, Sec. 388.

⁸ *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655.

See, also, Sec. 375.

law theory on riparian rights upon the ground that it is inapplicable to the conditions within the State of Oregon. In the decision rendered by the Supreme Court of the United States in *Boquillas Land & Cattle Co. v. Curtis*,⁹ Mr. Justice Holmes, in delivering the opinion of the Court, while deeming it unnecessary to decide whether lands in the arid regions patented after the Act of March 3, 1877, are not excepted, subject to the rule that priority of appropriation gives priority of right by virtue of that Act construed with the Act of 1866, said: "The Supreme Court of Arizona has rendered the decision to the effect on plausible grounds."¹⁰

§ 624. **Later Acts of Congress confirming doctrine of appropriation.**—There are a number of other Acts of Congress which still further confirm and sanction the doctrine of appropriation of the waters upon the public lands of the United States for beneficial purposes. These Acts will all be discussed in another portion of this work,¹ but we will make a hasty review of them here.

Among these Acts may be found the Act of March 3, 1891, granting rights of way through the public lands and reservations to canal or ditch companies for irrigation.² In construing the effect of this Act in connection with the Desert Land Act of 1877, discussed in our previous sections,³ Mr. Justice Brewer, in speaking for the Supreme Court of the United States, said: "Obviously by these Acts, so far as they extended, Congress recognized and assented to the appropriation of water in contravention to the common law rule as to continuous flow."⁴ The last part of section 18

⁹ 213 U. S. 339, 53 L. Ed. 822, 29 Sup. Ct. Rep. 493, affirming *Id.*, 11 Ariz. 128, 89 Pac. Rep. 504.

¹⁰ Citing, also, *Hough v. Porter*, *supra*; *United States v. Rio Grande Dam & Irrigation Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Gutierrez v. Albuquerque Land & Irrigation Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 New Mex. 177, 61 Pac. Rep. 357.

¹ See Part XI, Chaps. 65, 66, 67.

² 6 Fed. Stat. Ann., 1905, pp. 508-510; 2 U. S. Comp. Stat., 1901, p. 1514; Act of March 3, 1891, Ch. 561,

"An Act to repeal timber-culture laws, and for other purposes," 26 Stat. L. 1101, Secs. 18-21.

For full text of the sections in question, see Sec. 937.

See, also, chapter on rights of way, Secs. 927-948.

³ See Secs. 622, 623.

⁴ U. S. v. *Rio Grande etc. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770.

See, also, *Gutierrez v. Albuquerque etc. Co.*, 188 U. S. 545, 47 L. Ed. 588, 23 Sup. Ct. Rep. 338, affirming *Id.*, 10 New Mex. 177, 61 Pac. Rep. 357.

of the Act of March 3, 1891, provides: "And the privilege herein granted shall not be construed to interfere with the control of water for irrigation and other purposes under the authority of the respective States and Territories." By this clause in the Act the right of appropriation was directly recognized, as under the laws of all of the States and Territories affected by the Act the right of appropriation was provided for at the time.

The next important Act was the Act of August 18, 1894, commonly called the Carey Act,⁵ which Act also contained provisions for the reclamation of the desert lands, by the appropriation of water for the irrigation of the same. This Act will be fully discussed in a subsequent chapter. The only point which we wish to call attention to here is that this Act was in conformity with the general policy of the Government, that as far as it was concerned the waters flowing upon the public domain might be appropriated for irrigation as one of the beneficial uses; and, as a special inducement for the reclamation of lands by this means by a State accepting the provisions of the Act, the Government agreed to grant to the State from time to time as the work of reclamation proceeded as in the Act provided, "free of cost of survey or price of such desert lands, not exceeding 1,000,000 acres in each State."⁶

The last important Act of Congress, still further confirming the right of appropriation, was the National Reclamation Act, or the Act of June 17, 1902,⁷ by which Congress confers the power upon the General Government to make appropriations itself, and also to acquire other rights to water already appropriated, and to sell the right to the use thereof for irrigation to settlers of tracts of land not exceeding 160 acres.⁸ And the direct recognition and further confirmation of the general right of appropriation and of

⁵ 6 Fed. Stat. Ann., 1905, pp. 397, 398; 2 U. S. Comp. Stat., 1901, p. 1554; 28 Stat. L. 422.

For full text of the Act and the amendments thereto, see Secs. 1315-1322.

For the scope and construction of the Act, see Chap. 67, Secs. 1322-1336.

⁶ For a full discussion of the provisions of the Carey Act, see Chap. 67, Secs. 1312-1336.

⁷ 7 Fed. Stat. Ann., 1905, pp. 1098-

1101; Supp. U. S. Comp. Stat., 1905, pp. 349-354; 32 Stat. L. 388.

For full text of the Act and amendments thereto, see Secs. 1244-1260.

For scope and construction of the Act, see Chap. 65, Secs. 1261-1280.

⁸ Sec. 5 . . . "No right to the use of water for land in private ownership shall be sold for a tract not exceeding one hundred and sixty acres to any one land owner."

the laws of the various States and Territories under which these appropriations have been made, and are now being made, is to be found in section 8 of the Act. This section provides: "That nothing in this Act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested rights acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws."

Other Acts of Congress have also been passed from time to time which are unnecessary in this discussion, but which tend to show that the Arid Region Doctrine of appropriation is now one of the settled policies of the United States which has been embodied in the laws of Congress. This doctrine, which, as we have seen, originated with the customs and regulations of the early miners of California,⁹ has now become one of the settled laws of Congress as well as in all of the States and Territories of the arid and semi-arid West. From the first Act in 1866 to the National Reclamation Act in 1902, in fact all of the Acts of Congress relating to the subject have been a series of ratifications and confirmations of this doctrine.

§ 625. **The Acts of Congress must not be construed as an absolute dedication of all the waters for appropriation.**—The various Acts of Congress discussed in the preceding sections¹ must not be construed as an absolute dedication of all of the waters flowing over the public lands of the United States for appropriation for beneficial uses. Upon the other hand, by the more recent rulings of the United States Supreme Court, it is held that, although the power of changing the common law rule as to streams within its boundaries belongs to each State, yet two limitations must be recognized: First, that in the absence of specific legislation of Congress a State can not, by its legislation, destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters; so far, *at least*, as may be necessary for the beneficial uses of the Government property. Second, that it is limited to the superior power of the General Government to secure the uninterrupted navigability of all the navi-

⁹ For the history of the doctrine, see Secs. 595-624.

¹ See Secs. 611, 615, 622-624.

gable streams within the limits of the United States. In other words, the Court holds that the jurisdiction of the United States over the natural water courses is superior and paramount to the jurisdiction of any State; and that all needed measures may be taken by the Government to preserve the water courses of the country, for "*at least*" the two purposes named above, "*even against the action of any State,*" in authorizing, under its laws, appropriations to be made.² The Court, especially in the *Kansas-Colorado* and the *Rio Grande* cases, clearly intimates, to say the least, that the Government might also make other claims to the water than for its use for navigation, or as a riparian owner. Whether it will do so, time alone can tell.

§ 626. **The result of the doctrine of appropriation.**—Our history of the doctrine of appropriation would not be complete were we to pass unnoticed the vast number of claims for the use of water flowing over the public domain which have had their inception and have been perfected under the local laws of the respective Western States and Territories since the Acts of Congress of 1866 and 1870. The fact is well known that in every Western State both in the arid and semi-arid regions, the inception of thousands of these claims originated long subsequent to the passage of the Acts in question. In every locality, where there are arable land and water in near proximity to each other, throughout this whole Western country water has been diverted from the natural streams and lands cultivated by the means of irrigation. In fact the acts of appropriation and the amount of water diverted and used under the Arid Region Doctrine are many times more after the Acts of Congress of 1866 and 1870 than there were before. It was principally through this means that the country has become habitable; and, as the result of its condition, has become settled, first by the early pioneers, and now by all classes

² *Kansas v. Colorado*, 206 U. S. 46, 51 L. Ed. 956, 27 Sup. Ct. Rep. 655; *United States v. Rio Grande Dam & Irr. Co.*, 174 U. S. 690, 43 L. Ed. 1136, 19 Sup. Ct. Rep. 770; *Winters v. United States*, 207 U. S. 564, 52 L. Ed. 340, 28 Sup. Ct. Rep. 207; *United States v. Winans*, 198 U. S. 371, 49 L. Ed. 1089, 25 Sup. Ct. Rep. 662.

See, also, dedication by a State of its water, as against the United States, Sec. 388, and cases cited; *United States as a riparian owner*, see Sec. 480.

Impairment of the navigability of stream by the diversion of water for irrigation, Secs. 353-356.

of people that can be found in the Eastern States. Great cities have grown up and all kinds of business and manufacturing enterprises are being carried on. In the country districts great irrigation projects have been carried to complete success, in some cases including hundreds of thousands of acres of land. The inception of the rights to the waters for the irrigation of many of these lands originated since the Acts of Congress in question. These acts of appropriation are still going on in every Western State. There are still waters from the larger rivers which, by means of large investments of capital, may be diverted and applied to the irrigation of large tracts of now vacant lands. But the waters from the smaller sources of supply are nearly all appropriated, so that any extension in that direction, except by more economical use and the storage of the waters which run off during the non-irrigating period, is impossible. But the work of reclamation is bound to go on until the maximum limit is reached. The National Government, through the Reclamation Act, will be of great assistance toward this end, while, at the same time, it does not seem to be a rival to or hinder private enterprises. In fact, private enterprises seem to have prospered more since the Act was passed. The two work in harmony together and toward the common end, the settlement of the Western country and the development of its vast resources.

